PRELIMINARY FOREST HABITAT TYPES OF THE BOISE AND PAYETTE NATIONAL FORESTS, MAY 1973

by

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INTRODUCTION

Foresters in central Idaho have been using the Daubenmires' (1968) northern Idaho and eastern Washington habitat types the past few years with varying degrees of success or frustration. Since extrapolation was always somewhat uncertain, studies to develop a classification of the forest habitat types in central Idaho were initiated. Pfister began reconnaissance sampling of the subalpine types in 1970 and Ryker conducted reconnaissance sampling in the Douglas-fir series part time in 1970 and 1971. It became obvious that a major cooperative effort would be required to develop a complete forest habitat type classification for central Idaho. Therefore, R-4 and INT entered into a formal agreement in 1972. Field reconnaissance under this three-year cooperative study commenced in May 1972.

Crew leaders (Steele and Kittams) sampled mature forest stands on a wide variety of environments throughout the summer of 1972 according to a standardized approach spelled out in the study plan.

FIELD METHODS

Mature stands were sampled along elevational transects at selected locations throughout the Boise and Payette N.F.'s in an attempt to sample a full range of environmental conditions. Sampling was conducted on temporary 375 M^2 circular plots, referenced for possible revisitation during conduct of the study. In each stand, a tally of tree species by 2-inch d.b.h. classes was completed, amounts of all plant species were estimated by seven canopy-coverage classes, and a relatively free-growing tree of each tree species was measured for height, age, d.b.h. in order to estimate site potential by species. Observations were made on fire history, insect and disease occurrence, animal use, and position of the stand in relation to adjoining habitats. Soil samples were collected from the upper 2 decimeters (8 inches).

[1/] This report was prepared for a R-4 Habitat Type Training Session, June 12-14, 1973 at Warm Lake, Idaho. It presents a preliminary classification for two National Forests in central Idaho. It is the first major step in a cooperative R-4 - INT study to develop a classification of forest habitat types in central Idaho.

OFFICE METHODS

Following completion of the field work, several steps were involved in developing the preliminary classification.

Step 1 - Subjective, first approximation - Immediately following the field season, we constructed a first approximation of possible types based on our field observations. Daubenmires' (1968) types that had been encountered were listed. New situations, not meeting their descriptions, were described briefly and given tentative names. This process resulted in identification of 70 possible habitat types or phases.

Step 2 - Association tables, analysis - Association tables were made from those stands that did not fit the Daubenmires' (1968) descriptions. From the tables, groups of species could be identified as constituting new understory unions. The new understories when coupled with appropriate climax tree series yielded several new h.t.s.

Step 3 - Ordination of stands based on similarities and dissimilarities - By December, species identification and verification had been completed to the point that vegetative data analyses could be conducted.[2/] Data from stands were key-punched for ADP analysis. Ordination provided the opportunity to quantitatively express the similarity and dissimilarity between stands and to array the stands on this basis. Due to the large number of stands, stands were grouped by climax tree species prior to analysis. Plotting of individual species distribution allowed us to check for possible logical grouping of stands most similar into tentative associations.

Step 4 - Comparison of approximation, association tables, and ordinations - The first approximation and the association tables were compared to the ordination results to develop a second approximation of the types and phases.

Step 5 - Type description - A brief description of key vegetational parameters for these types and phases was prepared. From this a key to the types was constructed. Constancy and average coverage values for the important indicator plants were calculated as an aid in reviewing the proposed classification.

Step 6 - Verification and adjustments - All sample stands used in the analyses were then checked against the key and the type descriptions. Several revisions in the type descriptions were made to

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[2/] The services of Dr. Mont E. Lewis, Plant Taxonomist, Ogden, Utah in plant identification are gratefully acknowledged.

accommodate the actual stand data. Terminology for the types was corrected to compare as directly as possible with the Daubenmires' (1968) system, with Pfister, et al. (1972) western Montana classification, and to express the interrelationships of our types as clearly as possible. The phase was used as a classification unit to subdivide habitat types where appropriate. In some cases a phase represents a broad transition between two adjacent habitat types. In other cases, a phase represents a difference of vegetation dominance in a third layer, whereas the habitat type is defined by dominants in two layers. Constancy and average cover values were calculated for the important indicator plants following these adjustments (Table 3). A complete presence list was prepared for all species represented in at least five stands to allow further evaluation of the distribution of any species of interest. The complete presence table is reproduced separately and available upon request.

Step 7 - Summary of site data - All aspect, elevation, topography and slope data were summarized by the h.t.s and phases to aid in describing the location and general environmental characteristics of each type.

Step 8 - Summary of management implications - Basal area and site index data (Table 4) were analyzed. Other observations are included in the habitat type descriptions.

Step 9 - Type descriptions - A brief synopsis was prepared for each defined habitat type, highlighting key characteristics of the type. This includes a generalized description of the physical environmental features and location of the habitats, the key vegetational features, the descriptions of phases and basis for separation, and some implications for management.

Step 10 - Photographs of types - Colored photos were available for about 380 stands. Those best illustrating physiognomy of the different associations were selected and reproduced in slide sets available from the Boise N.F., Payette N.F., R-4, or INT.

RESULTS

A complete verbal account of results is not attempted herein. Instead, the basic features of the classification have been arranged in a logical order for purposes of training and utility for immediate application to the Boise and Payette National Forests, and adjoining land of other ownerships.

The preliminary classification (page 6) is presented on one page for an overall view of the types. Accompanying it are a list of the abbreviations commonly used throughout this report.

A new field form (page 7) was prepared to enable collection of the minimum data needed for identification of the types and phases. This form is designed specifically for the Boise and Payette National Forests for use with this classification.

The key to habitat types (pages 8-15) was simplified for utility, basing distinctions on single key criteria wherever possible. Accessory tables and type descriptions will aid in confirming identifications or for placing problem stands.

The distribution of reconnaissance plots (Table 1) portrays a general idea of geographic representation of the types and phases in central Idaho.

The distribution of tree species (Table 2) is an interpretive tabulation of tree species occurrence in defined types and phases. This provides the basic information for selection of tree species based on their environmental adaptation to specific habitats.

Constancy and average coverage data (Table 3) are useful for understanding the major vegetative criteria used to develop the new classification. Comparison of the types based upon this compositional information provides for an understanding of the classification that cannot be gained simply by using the key.

The summary of basal area and site indexes (Table 4) allows one to make an overall evaluation of relative productivity by types. The best site tree of each species represented in a stand was selected. Therefore, the values represent our best current estimate of the potential of sites. The values should be used for relative productivity considerations, not for absolute values at this time. Site indexes were calculated according to the formulas developed by Brickell (1970) on a 50-year age base. Means were calculated only if n was 3 or greater. Confidence intervals (95%) for estimation of the mean were calculated if n=5 or more.

The distribution of habitat types by landtype associations and tentative subsections are presented in tabular form (Tables 5 and 6). This array expresses general relationships. Further analyses will be conducted later as both classification systems become finalized during the next two years.

The habitat type descriptions (pages 25-60) are arranged by "series", based upon the climax tree species; series is the primary subdivision in the classification system. Descriptions of types are intentionally brief and will be expanded (within 2 years) upon completion of the study.

The management implications are also brief at this time. Some of our observations could not be completely evaluated prior to the training session. Further management implications can be developed by other studies related to this classification framework. For the present, the management implications prepared for a 1971 training session (Pfister, et al. 1971) can be used for those types similar to the Daubenmires' (1968) types. For the new types, new management implications must be developed separately.

The geographic distribution of habitat types (separate supplement) is a preliminary overview of general relationships between major environmental influences and habitat types on the Boise and Payette National Forests. Considerable field reconnaissance is needed to make these distribution patterns more complete.

The types presented in this report are preliminary. Following completion of reconnaissance sampling in the remainder of Montana, central and eastern Idaho and northeastern Wyoming, the types will be re-evaluated in relation to adjoining areas. From this large data base, a comprehensive overall classification of forest habitat types in the northern Rocky Mountains can be completed and presented as one unified package. Your assistance can greatly aid in completion of this project and in the accuracy of the final system. Any stands not fitting in this classification framework need to be considered in the final classification. For any stands that fit poorly into this classification, please complete the habitat type checklist, including stand location, and send this information to us. We will try to pinpoint the problem in classifying the particular stand, and will, if necessary, consider it when revising the classification system. The users of this system are, in effect, testing its applicability and any feedback, positive or negative will be appreciated.

SYNOPSIS OF PRELIMINARY HABITAT TYPE CLASSIFICATION

Habitat Types & Phases	Abbreviations
A. Pinus ponderosa series	
1. Pinus ponderosa/Agropyron spicatum	1. PP/Agsp
2. Pinus ponderosa/Festuca idahoensis	2. PP/Feid
3. Pinus ponderosa/Purshia tridentata	3. PP/Putr
4. Pinus ponderosa/Symphoricarpos albus	4. PP/Syal
5. Pinus ponderosa/Prunus virginiana	5. PP/Prvi
B. Pseudotsuga menziesii series	
6. Pseudotsuga menziesii/Agropyron spicatum	6. DF/Agsp
7. Pseudotsuga menziesii/Festuca idahoensis	7. DF/Feid
8. Pseudotsuga menziesii/Carex geyeri	8. DF/Cage
a. Artemisia tridentata phase	a. Artr phase
9. Pseudotsuga menziesii/Calamagrostis rubescens	9. DF/Caru
10. Pseudotsuga menziesii/Spiraea betulifolia	10. DF/Spbe
a. Carex geyeri phase	a. Cage phase
b. Calamagrostis rubescens phase	b. Caru phase
11. Pseudotsuga menziesii/Prunus virginiana	11. DF/Prvi
12. Pseudotsuga menziesii/Symphoricarpos albus	12. DF/Syal
13. Pseudotsuga menziesii/Physocarpus malvaceus	13. DF/Phma
14. Pseudotsuga menziesii/Acer glabrum	14. DF/Acgl
C. Abies grandis series	
15. Abies grandis/Clintonia uniflora	15. GF/Clun
16. Abies grandis/Vaccinium globulare	16. GF/Vagl
17. Abies grandis/Spiraea betulifolia	17. GF/Spbe
D. Abies lasiocarpa series	
18. Abies lasiocarpa/Clintonia uniflora	18. AF/Clun
19. Abies lasiocarpa/Menziesia ferruginea	19. AF/Mefe
20. Abies lasiocarpa/Xerophyllum tenax	20. AF/Xete
a. Vaccinium globulare phase	a. Vagl phase
21. Abies lasiocarpa/Vaccinium globulare	21. AF/Vagl
22. Abies lasiocarpa/Vaccinium caespitosum	22. AF/Vaca
a. Calamagrostis canadensis phase	a. Caca phase
23. Abies lasiocarpa/Calamagrostis canadensis	23. AF/Caca
a. Ligusticum canbyi phase	a. Lica phase
24. Abies lasiocarpa/Ligusticum canbyi	24. AF/Lica
25. Abies lasiocarpa/Caltha biflora	25. AF/Cabi
26. Abies lasiocarpa/Acer glabrum	26. AF/Acgl
27. Abies lasiocarpa/Spiraea betulifolia	27. AF/Spbe
28. Abies lasiocarpa/Vaccinium scoparium	28. AF/Vasc
29. Abies lasiocarpa/Luzula hitchcockii	29. AF/Luhi
a. Vaccinium scoparium phase	a. Vasc phase
30. Abies lasiocarpa/Calamagrostis rubescens	30. AF/Caru
31. Abies lasiocarpa/Carex geyeri	31. AF/Cage
a. Artemisia tridentata phase	a. Artr phase
32. Abies lasiocarpa - Pinus albicaulis	32. AF - WBP
E. Pinus contorta series	
33. Pinus contorta/Festuca idahoensis	33. LPP/Feid

BOISE AND PAYETTE HABITAT TYPE FIELD FORM | NAME | DATE

(CODE DESCRIPTION)

TOPOGRAPHY:
1-RIDGE
2-UPPER SLOPE
3-MID SLOPE
4-LOWER SLOPE
5-BENCH OR FLAT
6-STREAMBOTTOM

HORIZONTAL CONFIGURATION:
1-CONVEX (DRY)
2-STRAIGHT
3-CONCAVE (WET)
4-UNDULATING

VEGETATION COVERAGE: CLASS (1%)
0-NONE
T-RARE TO 1%
1-1 TO 5
2-5 TO 25
3-25 TO 50
4-50 TO 75
5-75 TO 95
6-95 TO 100

PLOT NO			
LOC			
T,R,S			
ELEV			
ASPECT			
SLOPE	%	%	%
TOPOG			
CONFIG			

NOTE: RATE TREES (> 4") AND REGEN (0-4") SEPARATELY (E.G. 4/2)

	TREES — SCIENTIFIC NAME	ABBREV	COMMON NAME			
1.	ABIES GRANDIS	GF	GRAND FIR			
2.	ABIES LASIOCARPA	AF	SUBALPINE FIR			
3.	LARIX OCCIDENTALIS	WL	WESTERN LARCH			
4.	PICEA ENGELMANNII	ES	ENGELMANN SPRUCE			
5.	PINUS ALBICAULIS	WBP	WHITEBARK PINE			
6.	PINUS CONTORTA	LPP	LODGEPOLE PINE			
7.	PINUS PONDEROSA	PP	PONDEROSA PINE			
8.	PSEUDOTSUGA MENZIESII	DF	DOUGLAS-FIR			
	SHRUBS					
9.	ACER GLABRUM	ACGL	MOUNTAIN MAPLE			
10.	LEDUM GLANDULOSUM	LEGL	WESTERN LABRADOR TEA			
11.	LONICERA CAERULEA	LOCA	SWEETBERRY HONEYSUCKLE			
12.	MENZIESIA FERRUGINEA	MEFE	MENZIESIA			
13.	PHYSOCARPOS MALVACEUS	PHMA	NINEBARK			
14.	PRUNUS VIRGINIANA	PRVI	CHOKECHERRY			
15.	PURSHIA TRIDENTATA	PUTR	BITTERBRUSH			
16.	SPIRAEA BETULIFOLIA	SPBE	WHITE SPIRAEA			
17.	SPIRAEA PYRAMIDATA	SPPY	PYRAMID SPIRAEA			
18.	SYMPHORICARPOS ALBUS	SYAL	SNOWBERRY			
19.	SYMPHORICARPOS OREOPHILUS	SYOR	WHORTLELEAF SNOWBERRY			
20.	VACCINIUM CAESPITOSUM	VACA	DWARF HUCKLEBERRY			
21.	VACCINIUM GLOBULARE	VAGL	BLUE HUCKLEBERRY			
22.	VACCINIUM SCOPARIUM	VASC	GROUSE WHORTLEBERRY			
	SUBSHRUBS (INCL. VINES)					
23.	ARCTOSTAPHYLOS UVA-URSI	ARUV	KINNIKINNICK			
24.	CLEMATIS COLUMBIANA	CLCO	ROCK CLEMATIS			
25.	LINNAEA BOREALIS	LIBO	TWINFLOWER			
	GRAMINOIDS					
26.	AGROPYRON SPICATUM	AGSP	BLUEBUNCH WHEATGRASS			
27.	CALAMAGROSTIS RUBESCENS	CARU	PINEGRASS			
28.	CALAMAGROSTIS CANADENSIS	CACA	BLUEJOINT			
29.	CAREX GEYERI	CAGE	ELKSEDGE			
30.	FESTUCA IDAHOENSIS	FEID	IDAHO FESCUE			
31.	JUNCUS PARRYI	JUPA	PARRY RUSH			
32.	LUZULA HITCHCOCKII	LUHI	SMOOTH WOODRUSH			
33.	STIPA OCCIDENTALIS	STOC	WESTERN NEEDLEGRASS			
	FORBS					
34.	CALTHA BIFLORA	CABI	TWINFLOWER MARSH MARIGOLD			
35.	CALTHA LEPTOSEPALA	CALE	ELKSLIP MARSH MARIGOLD			
36.	CLINTONIA UNIFLORA	CLUN	QUEENCUP BEADLILY			
37.	COPTIS OCCIDENTALIS	COOC	WESTERN GOLDTHREAD			
38.	DODECATHEON JEFFREYI	DOJE	JEFFREY SHOOTING STAR			
39.	LIGUSTICUM CANBYI	LICA	CANBY'S LIGUSTICUM			
40.	LIGUSTICUM TENUIFOLIUM	LITE	THINLEAF LIGUSTICUM			
41.	LOMATIUM DISSECTUM	LODI				
42.	SENECIO TRIANGULARIS	SETR	ARROWLEAF GROUNDSEL			
43.	SMILACINA RACEMOSA	SMRA	FALSE SOLOMON'S SEAL			
44.	STREPTOPUS AMPLEXIFOLIUS	STAM	TWISTED STALK			
45.	THALICTRUM OCCIDENTALE	THOC	WESTERN MEADOWRUE			
46.	XEROPHYLLUM TENAX	XETE	BEARGRASS			
47.						
48.						
49.	ARTEMESIA TRIDENTATA	ARTR	BIG SAGEBRUSH			

SERIES
HABITAT TYPE
PHASE

KEY TO BOISE AND PAYETTE FOREST HABITAT TYPES

Instructions: The first part of the key is designed to lead you to the correct climax tree species (SERIES). Generally, a tree species is considered an accidental if data and observations indicate that less than 10 per acre occupy, or will occupy, the site. After keying to SERIES, go to the individual key for each series to identify the habitat type (h.t.). Suggested phases of h.t.s are described in the write-up of each h.t. For consistency in identification of h.t.s, the terms used in the keys are defined as follows:

Definition of terms:

* well represented = species having greater than 5% canopy coverage (Class 2-6)
* poorly represented = species having less than 5% canopy coverage (Class 0-T-1)
* scarce = species with less than 1% canopy coverage (Class T)
  present = present in the stand but not obviously restricted to microsites.

* NOTE - In stands where understory vegetation is obviously depauperate because of dense shading, duff accumulation, or heavy grazing, the definitions may be adjusted to the next lower coverage class (e.g. well represented >1%, poorly represented <1%, scarce - present).

Key to Climax Series

1. Pinus ponderosa the only coniferous tree present; no indication that any other tree will dominate Pinus ponderosa at climax.
   Pinus ponderosa SERIES (p. 9)

1. Coniferous trees other than Pinus ponderosa present and indicating a potential to dominate the overstory at climax 2

   2. Pseudotsuga menziesii the indicated climax dominant; Abies spp. absent or present only as non-reproducing accidentals (<10/acre).
      Pseudotsuga menziesii SERIES (p. 10)

   2. Conifers other than Pseudotsuga present and reproducing successfully.. 3

      3. Abies grandis the indicated climax dominant; Abies lasiocarpa absent or present only as an accidental.
         Abies grandis SERIES (p. 12)

      3. Abies grandis not the indicated climax dominant 4

         4. Abies lasiocarpa and or Pinus albicaulis present and reproducing successfully.
            Abies lasiocarpa SERIES (p. 13)

         4. Abies lasiocarpa and Pinus albicaulis absent or not reproducing successfully 5

            5. Pinus contorta dominant and the only successfully reproducing conifer.
               Pinus contorta SERIES (p. 15)

            5. Pinus contorta dominate; Abies lasiocarpa or Pseudotsuga often present but not reproducing successfully; i.e. "subclimax communities".
               Pinus contorta COMMUNITIES (p. 15)

Key for PINUS PONDEROSA SERIES

1. Physocarpus malvaceus well represented -
   PINUS PONDEROSA/PHYSOCARPUS MALVACEUS H.T. *

1. Physocarpus malvaceus poorly represented 2

   2. Symphoricarpos albus well represented -
      PINUS PONDEROSA/SYMPHORICARPOS ALBUS H.T. (p. 28)

   2. Symphoricarpos albus poorly represented 3

      3. Prunus virginiana well represented -
         PINUS PONDEROSA/PRUNUS VIRGINIANA H.T. (p. 29)

      3. Prunus virginiana poorly represented 4

         4. Purshia tridentata well represented -
            PINUS PONDEROSA/PURSHIA TRIDENTATA H.T. (p. 27)

         4. Purshia tridentata poorly represented 5

            5. Festuca idahoensis well represented -
               PINUS PONDEROSA/FESTUCA IDAHOENSIS H.T. (p. 26)

            5. Festuca idahoensis poorly represented; grasses and forbs dominating the understory; Agropyron spicatum well represented on sites in good condition -
               PINUS PONDEROSA/AGROPYRON SPICATUM H.T. (p. 25)

* Pinus ponderosa/Physocarpus malvaceus (PP/ninebark) is a minor h.t. in drainages of the Little Salmon River and the Payette River. Pinus ponderosa is the climax tree over a dominant layer of Physocarpus malvaceus. The Daubenmires (1968) describe this h.t. more fully.

Key for PSEUDOTSUGA MENZIESII SERIES

1. Vaccinium caespitosum present but not scarce.
PSEUDOTSUGA MENZIESII/VACCINIUM CAESPITOSUM H.T. (p. 11)

1. Vaccinium caespitosum absent or scarce 2
2. Xerophyllum tenax well represented.
PSEUDOTSUGA MENZIESII/XEROPHYLLUM TENAX H.T. (p. 11)

2. Xerophyllum tenax poorly represented 3
3. Physocarpus malvaceus well represented.
PSEUDOTSUGA MENZIESII/PHYSOCARPUS MALVACEUS H.T. (p. 39)

3. Physocarpus malvaceus poorly represented 4
4. Symphoricarpos albus well represented.
PSEUDOTSUGA MENZIESII/SYMPHORICARPOS ALBUS H.T. (p. 38)

4. Symphoricarpos albus poorly represented 5
5. Spiraea betulifolia well represented.
PSEUDOTSUGA MENZIESII/SPIRAEA BETULIFOLIA H.T. (p. 35)

5. Spiraea betulifolia poorly represented 6
6. Prunus virginiana well represented.
PSEUDOTSUGA MENZIESII/PRUNUS VIRGINIANA H.T. (p. 37)

6. Prunus virginiana poorly represented 7
7. Acer glabrum well represented.
PSEUDOTSUGA MENZIESII/ACER GLABRUM H.T. (p. 40)

7. Acer glabrum poorly represented 8
8. Symphoricarpos oreophilus well represented and creating the dominant understory aspect.
PSEUDOTSUGA MENZIESII/SYMPHORICARPOS OREOPHILUS H.T. (p. 11)

8. Symphoricarpos oreophilus poorly represented 9
or at least not dominating the understory.
Either graminoids, forbs, or Artemisia dominant.
9. Calamagrostis rubescens well represented.
PSEUDOTSUGA MENZIESII/CALAMAGROSTIS RUBESCENS H.T. (p. 34)

9. Calamagrostis rubescens poorly represented 10
10. Carex geyeri well represented.
PSEUDOTSUGA MENZIESII/CAREX GEYERI H.T. (p. 32)

10. Carex geyeri poorly represented 11
11. Festuca idahoensis well represented.
PSEUDOTSUGA MENZIESII/FESTUCA IDAHOENSIS H.T. (p. 31)

11. Festuca idahoensis poorly represented.
Agropyron spicatum usually well represented.
PSEUDOTSUGA MENZIESII/AGROPYRON SPICATUM H.T. (p. 30)

Minor H.T.s in the PSEUDOTSUGA MENZIESII SERIES

Pseudotsuga menziesii/Vaccinium caespitosum (DF/dwarf huckleberry)

DF/Vaca was found on dry cold flats and benches in the Warm Lake area and near Rocky Bar. LPP forms subclimax stands over a dominant layer of Vaccinium caespitosum. DF/Vaca is more prevalent in western Montana and is more fully described by Pfister et al. (1972).

Pseudotsuga menziesii/Xerophyllum tenax (DF/beargrass)

DF/Xete was found on one southeast upper slope east of Warren. Xerophyllum formed a well developed layer with Vaccinium globulare lightly scattered throughout. Old growth Pseudotsuga formed a nearly closed canopy and no other tree was present. Pfister et al. (1972) describes DF/Xete in western Montana where it is more abundant.

Pseudotsuga menziesii/Symphoricarpos oreophilus (DF/whortleleaf snowberry)

DF/Syor occurs sporadically at mid to upper elevations on dry upper slopes and ridges across the southernmost part of our area. It is known as far west as Bear, Idaho northwest of Council. Symphoricarpos oreophilus forms a dominant shrub layer and forbs common to the drier Pseudotsuga h.t.s dominate the herb layer. DF/Syor shows better development to the east where it is more fully described for the Sawtooth area by Schlatterer (1972).

Key for ABIES GRANDIS SERIES*

1. Clintonia uniflora and/or Coptis occidentalis present.
   ABIES GRANDIS/CLINTONIA UNIFLORA H.T. (p. 41)

1. Clintonia and Coptis absent.
   2. Vaccinium globulare well represented 2
   ABIES GRANDIS/VACCINIUM GLOBULARE H.T. (p. 42)

   2. Vaccinium globulare poorly represented.
   ABIES GRANDIS/SPIRAEA BETULIFOLIA H.T. (p. 43)

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* The Boise and Payette National Forests lie at the eastern end of a large zone of intergradation between Abies grandis and Abies concolor var. lowiana (Daniels, 1969). Daniels (1969) found that the majority of these intergrades had the closest resemblance to A. grandis. Only a small percentage more closely resembled A. concolor. For this reason, Abies grandis is used as the epithet for all intergrades in our area. Local usage has coined the unofficial term "Grandicolor Fir" for these intergrades.

Key for ABIES LASIOCARPA SERIES

1. Clintonia uniflora present
   ABIES LASIOCARPA/CLINTONIA UNIFLORA H.T. (p. 44)

1. Clintonia uniflora absent 2
   2. Caltha biflora present.
      ABIES LASIOCARPA/CALTHA BIFLORA H.T. (p. 52)

   2. Caltha biflora absent 3
      3. Ledum glandulosum well represented; sites usually restricted to bog-like areas.
         ABIES LASIOCARPA/LEDUM GLANDULOSUM H.T. (p. 14)

      3. Ledum poorly represented; sites often other than described above 4
         4. Menziesia ferruginea well represented.
            ABIES LASIOCARPA/MENZIESIA FERRUGINEA H.T. (p. 45)

         4. Menziesia ferruginea poorly represented 5
            5. Vaccinium caespitosum well represented.
               ABIES LASIOCARPA/VACCINIUM CAESPITOSUM H.T. (p. 48)

            5. Vaccinium caespitosum poorly represented 6
               6. Calamagrostis canadensis well represented.
                  ABIES LASIOCARPA/CALAMAGROSTIS CANADENSIS H.T. (p. 49)

               6. Calamagrostis canadensis poorly represented 7
                  7. Ligusticum canbyi well represented.
                     ABIES LASIOCARPA/LIGUSTICUM CANBYI H.T. (p. 51)

                  7. Ligusticum canbyi poorly represented 8
                     8. Xerophyllum tenax well represented.
                        ABIES LASIOCARPA/XEROPHYLLUM TENAX H.T. (p. 46)

                     8. Xerophyllum tenax poorly represented 9
                        9. Vaccinium globulare or Linnaea borealis well represented.
                           ABIES LASIOCARPA/VACCINIUM GLOBULARE H.T. (p. 47)

                        9. Vaccinium globulare and Linnaea borealis poorly represented..... 10
                           10. Spiraea betulifolia well represented.
                              ABIES LASIOCARPA/SPIRAEA BETULIFOLIA H.T. (p. 54)

                           10. Spiraea betulifolia poorly represented 11
                              11. Acer glabrum well represented. Site usually dominated by tall shrubs with a rich forb layer beneath. Clematis columbiana often present.
                                 ABIES LASIOCARPA/ACER GLABRUM H.T. (p. 53)

11. Acer poorly represented. Site not dominated by tall shrubs. Clematis columbiana usually absent 12
    12. Luzula hitchcockii well represented.
        ABIES LASIOCARPA/LUZULA HITCHCOCKII H.T. (p. 56)

    12. Luzula hitchcockii poorly represented 13
        13. Vaccinium scoparium well represented.
            ABIES LASIOCARPA/VACCINIUM SCOPARIUM H.T. (p. 55)

        13. Vaccinium scoparium poorly represented..... 14
            14. Calamagrostis rubescens well represented.
                ABIES LASIOCARPA/CALAMAGROSTIS RUBESCENS H.T. (p. 57)

            14. Calamagrostis rubescens poorly represented..... 15
                15. Carex geyeri well represented.
                    ABIES LASIOCARPA/CAREX GEYERI H.T. (p. 58)

                15. Carex geyeri poorly represented 16
                    ABIES LASIOCARPA-PINUS ALBICAULIS BARRENS (p. 59)

Minor H.T.s in ABIES LASIOCARPA SERIES

Abies lasiocarpa/Ledum glandulosum (AF/western ledum)

AF/Legl occurs sporadically at upper elevations from Burgdorf to Rocky Bar. Ledum glandulosum forms a dominant shrub layer over numerous wet site forbs. Shrubs and forbs more typical of better drained sites may grow on existing hummocks. Picea engelmannii and Pinus contorta are both seral here but Picea is more prevalent. AF/Legl also occurs in the Sawtooth area where it is described more fully by Schlatterer (1972). However the AF/Legl in our area apparently represents the low elevation extreme of the h.t.

Key for PINUS CONTORTA SERIES and COMMUNITIES*

1. *Pinus contorta* the indicated climax species, other conifers absent; understory dominated by *Festuca idahoensis*, sometimes codominant with *Calamagrostis rubescens* ..... *Pinus contorta* SERIES
   PINUS CONTORTA/FESTUCA IDAHOENSIS H.T. (p. 60)

   (Note: This is the only habitat type presently recognized in the *Pinus contorta* SERIES for central Idaho.)

1. *Pinus contorta* the only dominant and successfully reproducing tree; understory not as defined above; *Pseudotsuga*, *Abies lasiocarpa*, or *Picea engelmannii* present as scattered accidentals or seed source for these species not within close proximity 2

   2. *Pseudotsuga* present in the stand; sites apparently too dry for *Abies lasiocarpa* or *Picea engelmannii*; understory species comparable to those described within the *Pseudotsuga* SERIES ..... *Pseudotsuga menziesii* SERIES (p. 10)

   2. *Abies lasiocarpa* or *Picea engelmannii* present in the stand; understory species comparable to those described within the *Abies lasiocarpa* SERIES ..... *Abies lasiocarpa* SERIES (p. 13)

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* Large acreages occupied by relatively stable young stands of *Pinus contorta* show little evidence of replacement by *Pseudotsuga* or *Abies lasiocarpa*. These stands could be described as "subclimax" communities or "Associes". It appears that most of these stands are, in the long term, successional to other conifers. Between 50 to 150 years these stands dominate the site and are apparently resistant to invasion of other conifer species. Therefore, in most situations, they should be keyed to habitat types within the *Pseudotsuga* or *Abies lasiocarpa* SERIES keys. Only in one situation, the *Pinus contorta*/*Festuca idahoensis* H.T., are we reasonably confident that *Pinus contorta* is the climax tree species. This H.T. is evidently too dry and/or too cold for other conifers. Additional research is needed to determine the rates of conifer invasion in the *Pinus contorta* subclimax stands.

TABLE 1 - PLOT DISTRIBUTION OF HABITAT TYPES AND PHASES BY MAJOR RIVER DRAINAGES

(LS=Little Salmon; S=Salmon except LS; NFP=North Fork Payette and Squaw Creek; MFP=Middle Fork Payette; SFP=South Fork Payette; B=Boise except SFB; SFB=South Fork Boise; W=Weiser and adjacent Snake)

Habitat Type	Phase	LS	S	NFP	MFP	SFP	B	SFB	W	Total
PP/Agsp		1	.	2		3	6	2	5	19
PP/Feid		1	.	1	.	.	1	2	1	6
PP/Putr		1	1	2	.	1	3	2	1	11
PP/Syal		1	.	.	.	2	2	1	4	10
PP/Prvi		.	.	.	.	.	3	2	.	5
DF/Agsp		.	.	.	.	.	3	7	4	14
DF/Feid		2	.	.	.	1	.	.	.	3
DF/Cage	-Cage	.	1	1	1	1	5	2	1	12
	-Artr	.	.	.	.	1	2	1	.	4
DF/Caru	-Caru	.	6	3	3	.	.	.	2	14
DF/Spbe	-Spbe	.	1	.	1	1	2	4	2	11
	-Cage	1	1	.	1	1	2	.	.	6
	-Caru	.	.	1	.	2	5	.	2	10
DF/Prvi		.	.	.	1	.	4	7	.	12
DF/Syal		1	4	2	2	1	2	.	6	18
DF/Phma		1	4	1	4	2	8	7	5	32
DF/Acgl		.	.	.	.	.	.	3	.	3
GF/Clun		5	.	6	.	.	.	.	4	15
GF/Vagl		2	2	12	3	.	.	.	2	21
GF/Spbe		.	.	7	2	.	.	.	13	22
AF/Clun		2	.	4	.	.	.	.	.	6
AF/Mefe		.	4	2	1	.	.	.	.	7
AF/Xete	-Xete	.	7	4	.	.	.	.	.	11
	-Vagl	1	2	4	.	.	.	.	.	7
AF/Vagl		1	5	1	5	.	4	.	1	17
AF/Vaca	-Vaca	.	6	2	.	1	.	.	.	9
	-Caca	.	3	1	.	.	.	.	.	4
AF/Caca	-Caca	1	1	4	1	1	1	.	.	9
	-Lica	1	2	3	.	.	.	.	.	6
AF/Lica		2	1	1	.	.	.	.	.	4
AF/Cabi		.	1	.	.	1	1	1	.	4
AF/Acgl		.	.	.	1	.	3	.	.	4
AF/Spbe		.	.	.	.	1	2	2	.	5
AF/Vasc		.	2	2	.	3	.	1	.	8
AF/Luhi	-Luhi	1	4	.	.	1	.	.	.	6
	-Vasc	.	3	1	.	.	.	.	.	4
AF/Caru		1	2	2	.	1	1	.	.	8
AF/Cage	-Cage	.	4	.	.	4	3	1	.	12
	-Artr	.	.	1	.	.	1	.	.	2
AF/WBP		1	1	3	.	1	1	3	.	10
LPP/Feid		.	3	.	.	.	.	.	.	3

TABLE 2 - DISTRIBUTION AND ROLES OF TREE SPECIES BY HABITAT TYPES

Distribution of tree species through the series of habitat types, showing their status in forest succession. (C = major climax species, c = minor climax species, S = major seral, s = minor seral, a = accidentals ( ) = in certain areas of the type) as interpreted from central Idaho reconnaissance plot data.

Habitat Type Phase	PP	DF	GF	LPP	WL	ES	AF	WBP
PP/Agsp	C	(a)	.	.	.	.	.	.
PP/Feid	C	(a)	.	.	.	.	.	.
PP/Putr	C	(a)	.	.	.	.	.	.
PP/Syal	C	.	.	.	.	.	.	.
PP/Prvi	C	.	.	.	.	.	.	.
DF/Agsp	(c)	C	.	.	.	.	.	.
DF/Feid	(c)	C	.	(a)	.	.	.	.
DF/Cage-Cage	(S)	C	.	(s)	.	.	a	(a)
-Artr	.	C	.	a	.	.	(a)	(c)
DF/Caru-Caru	(S)	C	(a)	(S)	.	.	a	.
DF/Spbe-Spbe	S	C	.	.	.	.	.	.
-Cage	(S)	C	.	.	.	.	a	.
-Caru	S	C	.	a	.	.	.	.
DF/Prvi	(S)	C	.	(a)	.	.	(a)	.
DF/Syal	S	C	.	(s)	.	.	(a)	.
DF/Phma	(S)	C	a	.	.	a	a	.
DF/Acgl	(S)	C	.	.	.	.	.	.
GF/Clun	s	S	C	(s)	S	S	.	.
GF/Vagl	s	S	C	(s)	(s)	s	.	.
GF/Spbe	S	S	C	(s)	(s)	a	a	.
AF/Clun	.	S	(c)	s	(s)	S	C	.
AF/Mefe	.	.	.	s	(s)	S	C	.
AF/Xete-Xete	.	(s)	(c)	S	(a)	s	C	(s)
-Vagl	.	(s)	.	S	.	S	C	(a)
AF/Vagl	.	S	(c)	s	.	S	C	.
AF/Vaca-Vaca	.	(s)	(c)	S	.	s	C	(a)
-Caca	.	.	.	S	.	s	C	.
AF/Caca-Caca	.	.	.	S	.	S	C	.
-Lica	.	(a)	.	s	.	S	C	.
AF/Lica	.	.	.	s	.	c	C	.
AF/Cabi	.	.	.	s	.	S	C	.
AF/Acgl	.	S	.	.	.	.	C	.
AF/Spbe	(a)	S	.	s	.	.	C	(a)
AF/Vasc	.	s	(c)	S	.	s	C	s
AF/Luhi-Luhi	.	(s)	.	s	.	(s)	C	S
-Vasc	.	.	.	S	.	s	C	S
AF/Caru	.	S	(a)	S	.	s	C	s
AF/Cage-Cage	.	(S)	.	S	.	(s)	C	(s)
-Artr	.	(c)	.	s	.	.	C	c
AF-WBP	.	.	.	.	.	(a)	C	C
LPP/Feid	.	.	.	C	.	.	.	.
	PP	DF	GF	LPP	WL	ES	AF	WBP

TABLE 3 - CONSTANCY AND (AVERAGE COVERAGE %)[1/] OF IMPORTANT UNDERSTORY PLANTS IN BOISE AND PAYETTE NATIONAL FOREST HABITAT TYPES AND PHASES (1973)

	PONDEROSA PINE CLIMAX SERIES				
	PP/Agsp h.t.	PP/Feid h.t.	PP/Putr h.t.	PP/Prvi h.t.	PP/Syal h.t.
No. of Stands	n = 19	n = 6	n = 11	n = 5	n = 10
SHRUBS					
Amalanchier alnifolia	3 (1)	7 (2)	6 (2)	10 (8)	9 (6)
Artemisia tridentata ssp. vaseyana	2 (7)	8 (14)	2 (2)	2 (38)	1
Prunus emarginata	2 (2)	.	1	4 (9)	1 (15)
Prunus virginiana	3 (3)	3 (3)	5 (1)	10 (22)	6 (4)
Purshia tridentata	7 (1)	3 (3)	10 (25)	2 (15)	5 (1)
Spiraea betulifolia	2 (4)	5 (1)	2 (2)	2 (38)	3 (26)
Symphoricarpos albus	+ (3)	2	1 (3)	2	10 (45)
Symphoricarpos oreophilus	1 (5)	.	2 (8)	8 (5)	3 (14)
GRAMINOIDS					
Agropyron spicatum	10 (20)	8 (11)	9 (20)	4 (8)	5 (1)
Calamagrostis rubescens	+	.	.	4 (50)	4 (50)
Carex geyeri	2	2	3 (1)	10 (23)	6 (17)
Festuca idahoensis	2 (2)	10 (36)	3 (30)	6 (6)	2
Koeleria cristata	.	3	3	.	.
Poa nervosa	1 (8)	.	.	4 (2)	2 (8)
FORBS					
Arnica cordifolia	.	2	.	4 (2)	4 (13)
Balsamorhiza sagittata	6 (17)	5 (14)	7 (11)	6 (5)	4 (5)
Lomatium dissectum	3 (11)	2	3	6	.
Smilacina racemosa	.	2	.	8 (4)	4

Code to Constancy Values:
+ = 0-5%
1 = 5-15%
2 = 15-25%
3 = 25-35%
4 = 35-45%
5 = 45-55%
6 = 55-65%
7 = 65-75%
8 = 75-85%
9 = 85-95%
10 = 95-100%

Source of Sample Plots

5 - Ryker, Part time, 1970 & 1971
24 - Pfister, Boise N.F.
53 - Pfister, Payette N.F.
312 - Steele and Kittams 1972
394

Average coverage expressed to nearest percent.
Where no coverage value is entered, the average coverage was less than 1%.

[1/] Coverage is averaged only for plots where plant occurred.

TABLE 3 Cont. - CONSTANCY AND (AVERAGE COVERAGE %) OF IMPORTANT UNDERSTORY PLANTS IN BOISE AND PAYETTE NATIONAL FOREST HABITAT TYPES AND PHASES (1973)

SERIES	DOUGLAS-FIR CLIMAX SERIES												GRAND FIR SERIES		
HABITAT TYPE	DF/Agsp	DF/Feid	DF/Cage -Cage	DF/Cage -Artr	DF/Caru	DF/Spbe -Spbe	DF/Spbe -Cage	DF/Spbe -Caru	DF/Prvi	DF/Syal	DF/Phma	DF/Acgl	GF/Clun	GF/Vagl	GF/Spbe
PHASE															
NO. OF STANDS	n = 14	n = 3	n = 12	n = 4	n = 14	n = 11	n = 6	n = 10	n = 12	n = 18	n = 32	n = 3	n = 15	n = 21	n = 22
SHRUBS															
Acer glabrum	3 (8)	.	2 (1)	.	1 (3)	5 (3)	2 (1)	3 (1)	2	1 (1)	3	10(22)	5 (15)	5 (5)	4 (2)
Alnus sinuata	.	.	.	.	.	.	.	.	.	.	.	.	2 (30)	1 (10)	.
Amelanchier alnifolia	7 (2)	7 (1)	7 (2)	.	5 (1)	10 (6)	10 (2)	10 (4)	8 (7)	8 (9)	10 (5)	10 (22)	9 (6)	9 (6)	.
Artemisia tridentata ssp. vaseyana	3 (1)	.	2 (1)	10 (38)	.	.	.	.	1	.	1	.	.	.	.
Ceanothus velutinus	5 (4)	3	2 (1)	.	3 (20)	5 (1)	5 (1)	5 (5)	3 (6)	2 (5)	4 (2)	.	.	2 (5)	4 (2)
Lonicera caerulea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lonicera utahensis	.	3 (1)	2 (1)	.	2 (1)	1 (3)	2 (1)	2 (2)	.	1 (3)	1 (2)	.	9 (12)	10 (9)	5 (7)
Menziesia ferruginea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Physocarpus malvaceus	.	.	.	.	1 (3)	2 (1)	2 (3)	3 (2)	.	1 (2)	10 (59)	.	1 (3)	3 (11)	3 (13)
Prunus emarginata	3 (5)	.	.	.	1 (2)	2 (1)	.	.	2 (8)	2 (3)	.	3 (36)	.	.	4 (1)
Prunus virginiana	6 (1)	.	3 (1)	.	3 (3)	5 (7)	7 (1)	1 (3)	10 (23)	4 (4)	5 (2)	10 (1)	1	1 (2)	1 (1)
Purshia tridentata	4 (8)	.	2 (1)	.	3 (23)	3 (1)	2 (3)	2 (1)	3 (1)	1 (2)	2 (2)	3	.	.	.
Rosa gymnocarpa	.	.	1 (1)	.	1	1 (1)	2 (3)	1 (1)	1	.	2 (5)	.	9 (3)	7 (5)	7 (4)
Spiraea betulifolia	1 (1)	3 (1)	3 (2)	.	6 (1)	10 (48)	8 (21)	7 (33)	1	7 (37)	7 (22)	.	5 (9)	9 (5)	8 (13)
Spiraea pyramidata	.	.	.	.	.	.	3 (61)	3 (30)	.	1 (3)	.	.	.	.	1 (29)
Symphoricarpos albus	1 (1)	10 (2)	2 (3)	.	1 (3)	3 (3)	10 (40)	2 (2)	1	10 (40)	5 (13)	.	3 (3)	1 (5)	5 (11)
Symphoricarpos oreophilus	4 (3)	.	7 (5)	10 (2)	4 (4)	4 (8)	7 (8)	6 (4)	7 (15)	4 (9)	5 (4)	10 (22)	1	1 (8)	2
Vaccinium caespitosum	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.
Vaccinium globulare & V. membranaceum	.	.	.	.	1 (15)	.	.	2 (1)	.	1 (3)	1 (11)	.	8 (32)	10 (43)	1 (1)
Vaccinium scoparium	.	.	.	.	1 (85)	.	.	.	.	.	.	.	1	1	.
SUBSHRUBS (incl. Vines)															
Clematis columbiana	.	.	.	.	.	.	.	.	.	.	1	3	2 (5)	1 (2)	2 (1)
Linnaea borealis	.	.	.	.	.	.	.	.	.	.	.	.	5 (19)	3 (38)	.
GRAMINOIDS															
Agropyron spicatum	9 (22)	7 (38)	5 (3)	7 (23)	1 (1)	2 (8)	5 (6)	1 (1)	4 (1)	2 (5)	2 (1)	.	.	.	.
Bromus carinatus	3 (1)	.	6 (1)	7 (1)	2 (1)	3 (2)	2 (1)	1 (1)	.	2 (1)	1	3	2	. (3)	2
Calmagrostis canadensis	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.
Calamagrostis rubescens	.	3 (1)	4 (2)	.	10 (47)	3 (7)	2 (3)	10 (48)	1 (1)	8 (32)	6 (16)	.	5 (2)	6 (11)	9 (14)
Carex geyeri	1 (1)	7 (1)	10 (34)	10 (35)	9 (11)	5 (1)	10 (35)	10 (6)	4 (11)	9 (22)	7 (16)	3 (5)	3 (9)	5 (4)	7 (3)
Festuca idahoensis	.	10 (46)	2 (1)	2 (3)	1 (15)	2 (1)	2 (38)	1 (3)	.	2 (1)	1 (1)	.	.	.	.
Koeleria cristata	.	7 (1)	2 (1)	.	.	.	.	1 (1)	.	.	.	.	.	.	.
Luzula hitchcockii	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Poa nervosa	3 (8)	3 (3)	6 (1)	7 (1)	5 (1)	5 (1)	3 (1)	1 (1)	2	2 (1)	2 (1)	7	.	.	.
FORBS															
Arenaria macrophylla	1 (3)	3 (1)	4 (2)	.	6 (1)	5 (2)	8 (3)	9 (3)	4 (5)	7 (1)	7 (5)	7	9 (5)	8 (2)	9 (2)
Arnica cordifolia	.	3 (3)	3 (3)	.	7 (10)	6 (14)	7 (4)	7 (10)	4 (2)	7 (16)	8 (11)	10 (11)	5 (4)	7 (6)	7 (11)
Balsamorhizia sagittata	7 (9)	.	4 (7)	5 (15)	3 (1)	4 (2)	5 (7)	4 (1)	6 (3)	3 (1)	.	.	.	.	.
Clatha biflora	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Clintonia uniflora	.	.	.	.	.	.	.	.	.	.	.	.	9 (10)	.	.
Coptis occidentalis	.	.	.	.	.	.	.	.	.	.	.	.	3 (15)	. (15)	.
Dodecatheon jeffreyi	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Fragaria vesca	1 (2)	3 (1)	1 (1)	.	3 (2)	3 (13)	7 (2)	6 (4)	2	8 (9)	5 (2)	3 (3)	9 (3)	8 (4)	6 (2)
Fragaria virginiana	.	3 (1)	.	.	2 (1)	1 (38)	.	.	.	2 (15)	1 (2)	.	3 (3)	4 (2)	1 (2)
Galium triflorum	.	.	.	.	1 (1)	2 (1)	2 (1)	2 (2)	.	2 (6)	2 (3)	.	9 (8)	7 (1)	5
Ligusticum canbyi	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ligusticum tenuifolium	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lomatium dissectum	8 (13)	7 (1)	.	.	.	3 (2)	2 (1)	.	2	.	2	.	.	.	.
Osmorhiza chilensis	.	.	2 (2)	.	2 (5)	3 (1)	2 (1)	2 (2)	4 (5)	4 (3)	4 (1)	7 (1)	9 (2)	8 (2)	8 (1)
Pedicularis bracteosa	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pedicularis racemosa	.	.	.	.	.	.	.	.	.	.	.	.	4 (5)	3 (1)	1
Potentilla gracilis	.	.	.	.	.	.	.	.	.	2	.	.	1	.	.
Saxifraga arguta	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.
Senecio triangularis	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.
Smilacina racemosa	2 (1)	3 (1)	3 (1)	.	4 (1)	4 (8)	7 (1)	7 (1)	.	7 (6)	7 (3)	10 (14)	7 (3)	8 (2)	6 (1)
Streptopus amplexifolius	.	.	.	.	.	.	.	.	.	.	.	.	1 (3)	.	.
Thalictrum occidentale	.	.	2 (1)	.	5 (2)	2 (1)	.	3 (1)	.	6 (19)	3 (6)	3	10 (9)	10 (9)	8 (12)
Viola orbiculata	.	.	.	.	.	.	.	.	.	.	.	.	8 (6)	6 (3)	.
Xerophyllum tenax	.	.	.	.	1 (1)	1 (3)	.	.	.	.	.	.	.	.	.

TABLE 3 Cont. - CONSTANCY AND (AVERAGE COVERAGE %) OF IMPORTANT UNDERSTORY PLANTS IN BOISE AND PAYETTE NATIONAL FOREST HABITAT TYPES AND PHASES (1973)

SERIES	ALPINE FIR CLIMAX SERIES																						LPP SERIES
HABITAT TYPE	AF/Clun	AF/Hefe	AF/Xete	AF/Xete	AF/Vagl	AF/Vaca	AF/Vaca	AF/Caca	AF/Caca	AF/Lica	AF/Cabi	AF/Acgl	AF/Spbe	AF/Vasc	AF/Luhi	AF/Luhi	AF/Caru	AF/Cage	AF/Cage	AF-WBP	LPP/Feid
PHASE			-Xete	-Vagl		-Vaca	-Caca	-Caca	-Lica						-Luhi	-Vasc		-Cage	-Arth		
NO. OF STANDS	n = 6	n = 7	n = 11	n = 7	n = 17	n = 9	n = 4	n = 9	n = 6	n = 4	n = 4	n = 4	n = 5	n = 8	n = 6	n = 4	n = 8	n = 12	n = 2	n = 10	n = 3
SHRUBS																					
Acer glabrum	3 (3)	.	.	.	4 (3)	.	.	.	.	.	.	10 (12)	2 (3)	.	.	.	.	.	.		
Alnus sinuata	3 (9)	3 (38)	.	1 (3)	2 (7)	.	.	1 (3)	.	2 (3)	5 (3)	.	.	1 (3)	.	.	.	.	.		
Amelanchier alnifolia	8 (3)	1 (15)	1 (3)	1 (3)	3 (3)	4 (3)	2 (3)	3 (3)	2 (3)	.	.	7 (7)	8 (6)	1 (3)	.	.	4 (3)	4 (3)	.	.	
Artemisia tridentata ssp. vaseyana	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10 (15)	1 (38)	
Ceanothus velutinus	2 (3)	.	.	.	.	.	.	.	.	.	.	.	2 (3)	.	.	.	2 (3)	2 (9)	.	.	
Lonicera caerulea	.	.	.	.	.	2 (3)	7 (7)	.	.	.	.	.	.	.	.	.	.	.	.	.	
Lonicera utahensis	7 (15)	6 (3)	8 (6)	6 (6)	9 (14)	6 (5)	.	7 (5)	7 (6)	5 (3)	2 (15)	7 (11)	6 (3)	9 (5)	6 (3)	2 (3)	1 (3)	3 (6)	.	.	
Menziesia ferruginea	2 (38)	10 (75)	.	3 (3)	1 (3)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Physocarpus malvaceus	.	.	.	.	1 (3)	.	.	.	.	.	.	2 (3)	.	.	.	.	.	.	.	.	
Prunus emarginata	.	.	.	.	.	.	.	.	.	.	.	2 (3)	.	.	.	.	1 (3)	1 (3)	.	.	
Prunus virginiana	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1 (3)	.	.	
Purshia tridentata	.	.	.	.	1 (3)	1 (3)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3
Rosa gymnocarpa	3 (9)	1 (3)	.	.	5 (3)	1 (3)	2 (3)	1 (3)	.	.	.	5 (3)	.	1 (15)	.	.	.	.	.	.	
Spiraea betulifolia	2 (15)	4 (7)	2 (15)	6 (6)	4 (6)	1 (3)	.	1 (3)	.	.	.	2 (3)	10 (46)	4 (3)	.	.	2 (3)	2 (3)	.	.	
Spiraea pyramidata	3 (15)	.	.	.	2 (3)	2 (3)	5 (20)	.	.	.	.	.	.	.	.	.	.	.	.	.	
Symphoricarpos albus	.	.	.	.	1 (3)	.	.	.	.	.	.	2 (3)	2 (3)	.	.	.	.	1 (3)	.	.	
Symphoricarpos oreophilus	.	1 (3)	1 (15)	.	2 (3)	.	.	2 (15)	.	.	.	7 (7)	6 (7)	2 (3)	.	.	7 (5)	3 (6)	10 (9)	.	
Vaccinium caespitosum	.	.	1 (3)	.	1 (3)	10 (33)	10 (47)	1 (3)	.	.	2 (3)	.	2 (3)	.	.	2 (3)	.	.	.	.	
Vaccinium globulare & V. membranaceum	10 (28)	7 (31)	5 (5)	10 (58)	10 (51)	1 (3)	.	6 (7)	7 (21)	7 (3)	2 (15)	.	.	6 (3)	.	.	1 (3)	1 (3)	.	.	
Vaccinium scoparium	3 (3)	3 (15)	9 (43)	3 (15)	4 (3)	7 (19)	2 (3)	4 (32)	7 (26)	5 (9)	10 (12)	.	2 (3)	10 (79)	4 (3)	10 (68)	.	1 (3)	.	.	
SUBSHRUBS (incl. Vines)																					
Clematis columbiana	2 (3)	.	.	.	1 (3)	.	.	.	.	.	.	7 (3)	.	.	.	.	.	.	.	.	
Linnaea borealis	6 (27)	3 (26)	.	.	1 (68)	.	2 (15)	1 (15)	.	.	.	.	.	1 (3)	.	.	.	.	.	.	
GRAMINOIDS																					
Agropyron spicatum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1 (3)	
Bromus carinatus	.	.	.	.	.	1 (3)	2 (15)	.	.	.	2 (3)	.	.	.	.	.	.	1 (3)	5 (3)	1 (3)	.
Calamagrostis canadensis	.	1 (3)	3 (3)	3 (3)	.	1 (3)	7 (30)	10 (42)	8 (42)	5 (3)	5 (3)	.	.	.	.	.	.	.	.	.	
Calamagrostis rubescens	2 (15)	3 (15)	5 (3)	3 (9)	5 (9)	9 (40)	2 (3)	1 (15)	.	.	.	.	6 (3)	5 (9)	.	.	10 (44)	1 (3)	5 (3)	.	7 (26)
Carex geyeri	3 (9)	3 (3)	5 (9)	1 (15)	8 (5)	8 (11)	2 (3)	.	.	2 (3)	7 (11)	7 (7)	10 (17)	9 (23)	6 (11)	7 (7)	10 (19)	10 (44)	10 (26)	1 (3)	3 (3)
Festuca idahoensis	.	.	.	.	.	2 (3)	.	.	.	.	.	.	.	.	.	.	2 (9)	2 (9)	.	2 (3)	10 (15)
Koeleria cristata	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Luzula hitchcockii	.	3 (9)	5 (5)	4 (30)	1 (3)	.	.	2 (33)	5 (30)	10 (6)	.	.	.	.	10 (60)	10 (21)	.	.	.	1 (3)	
Poa nervosa	.	.	2 (3)	.	.	1 (3)	2 (3)	.	.	.	.	.	2 (3)	.	2 (3)	2 (3)	2 (3)	3 (3)	5 (3)	.	
FORBS																					
Arenaria macrophylla	7 (6)	4 (3)	5 (3)	9 (3)	8 (4)	2 (3)	2 (3)	6 (3)	3 (9)	7 (3)	5 (9)	10 (12)	6 (7)	5 (3)	2 (3)	.	4 (3)	1 (3)	.	.	
Arnica cordifolia	5 (3)	6 (23)	2 (9)	3 (3)	8 (5)	2 (3)	.	1 (3)	3 (9)	5 (3)	2 (3)	2 (3)	8 (6)	2 (3)	2 (3)	5 (3)	2 (9)	.	.	.	
Balsamorhiza sagittata	.	.	.	.	.	.	.	.	.	.	.	.	2 (3)	.	.	.	2 (3)	.	5 (3)	.	
Caltha biflora	.	.	.	.	.	.	.	.	.	.	10 (27)	.	.	.	.	.	.	.	.	.	
Clintonia uniflora	10 (19)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Coptis occidentalis	2 (15)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Dodecatheon jeffreyi	.	1 (15)	.	1 (3)	1 (3)	.	2 (3)	3 (7)	10 (20)	5 (9)	10 (27)	.	.	.	.	.	.	.	.	.	
Fragaria vesca	3 (3)	1 (3)	.	.	4 (3)	.	.	.	.	.	.	.	4 (3)	.	.	.	.	.	.	.	
Fragaria virginiana	7 (3)	1 (3)	2 (3)	.	2 (3)	9 (16)	10 (9)	2 (9)	.	.	2 (3)	.	.	4 (3)	.	.	1 (3)	2 (3)	.	.	
Galium triflorum	8 (5)	3 (3)	.	1 (3)	4 (5)	1 (3)	2 (3)	3 (18)	5 (14)	5 (3)	.	2 (15)	2 (3)	.	.	.	.	1 (3)	.	.	
Ligusticum canbyi	3 (3)	1 (3)	.	3 (3)	.	.	.	2 (3)	10 (42)	10 (30)	2 (3)	.	.	.	.	.	.	.	.	.	
Ligusticum tenuifolium	.	.	.	.	.	.	7 (23)	1 (15)	.	.	.	.	.	.	.	.	.	.	.	.	
Lomatium dissectum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Osmorhiza chilensis	8 (8)	3 (3)	1 (3)	6 (3)	6 (3)	1 (3)	2 (3)	8 (3)	5 (30)	10 (15)	5 (9)	2 (3)	10 (3)	1 (3)	.	.	1 (3)	3 (3)	.	1 (3)	
Pedicularis bracteosa	2 (3)	1 (3)	1 (3)	.	.	.	.	2 (3)	10 (3)	2 (3)	7 (3)	.	.	.	2 (3)	.	.	.	.	.	
Pedicularis racemosa	5 (3)	3 (3)	5 (5)	9 (3)	4 (7)	.	.	4 (6)	3 (3)	10 (3)	5 (3)	.	2 (3)	6 (3)	2 (3)	5 (9)	2 (3)	1 (3)	.	.	
Potentilla gracilis	.	.	.	.	.	1 (3)	5 (3)	.	.	.	2 (3)	.	.	.	.	.	.	.	.	.	
Saxifraga arguta	.	.	.	.	.	.	.	.	.	2 (3)	10 (9)	.	.	.	.	.	.	.	.	.	
Senecio triangularis	2 (15)	1 (3)	.	1 (3)	1 (3)	.	.	4 (6)	8 (17)	10 (12)	10 (9)	.	.	.	.	.	.	.	.	.	
Smilacina racemosa	5 (3)	1 (3)	2 (3)	.	4 (3)	.	.	2 (3)	.	.	.	10 (6)	4 (3)	1 (3)	.	.	2 (3)	2 (3)	.	.	
Streptopus amplexifolius	5 (11)	3 (3)	.	.	2 (3)	.	.	2 (3)	7 (9)	7 (3)	5 (15)	.	.	.	.	.	.	.	.	.	
Thalictrum occidentale	10 (13)	3 (9)	5 (12)	3 (3)	8 (9)	2 (3)	5 (3)	6 (5)	10 (15)	10 (6)	2 (15)	7 (31)	10 (3)	2 (3)	2 (3)	.	2 (9)	3 (15)	.	.	
Viola orbiculata	7 (3)	9 (7)	6 (5)	6 (3)	4 (3)	3 (3)	.	4 (3)	7 (6)	10 (3)	2 (3)	.	.	1 (3)	.	.	1 (3)	.	.	.	
Xerophyllum tenax	2 (3)	3 (9)	10 (55)	10 (52)	.	1 (38)	.	3 (3)	5 (7)	7 (3)	.	.	.	.	.	5 (3)	.	.	.	.	

TABLE 4 - MEAN BASAL AREAS AND SITE INDEXES FOR BOISE AND PAYETTE N.F. HABITAT TYPES[1/]

Habitat Type	Phase	Basal Area in sq.ft.	Site Index by Species							
			PP	DF	GF	LPP	WL	ES	AF	WBP
PP/Agsp		121±65	50±7							
PP/Feid		98±74	44±?							
PP/Putr		79±22	44±7							
PP/Syal		194±43	58±9							
PP/Prvi		218±?	-							
DF/Agsp		119±43	53±11	52± 6						
DF/Feid		128±?	-	49±?						
DF/Cage	-Cage	179±78	43±?	53± 9		-				
	-Artr	-		-						-
DF/Caru	-Caru	162±65	54±?	58± 8		59±?				
DF/Spbe	-Spbe	162±65	60±19	60±10						
	-Cage	86±43	56±?	52±?						
	-Caru	194±43	57±17	61±12						
DF/Prvi		162±43	63±?	61± 7						
DF/Syal		227±65	69±6	64±10		-				
DF/Phma		194±32	66±10	64± 6						
DF/Acgl		207±?	-	-						
GF/Clun		248±60	-	68±10	-	-	61±5	62±11		
GF/Vagl		313±151	82±?	70±10	57±25	52±?	-	65±?		
GF/Spbe		248±32	78±7	76± 6	59± 9	-	-			
AF/Clun		259±?		-	-	-	-	64±?	-	
AF/Mefe		181±?				-	-	-	-	
AF/Xete	-Xete	151±43		-	-	-		-	46±13	-
	-Vagl	248±?		-		64±?		47±?	46±?	
AF/Vagl		140±32		61± 9	-	-		60±?	51± 9	
AF/Vaca	-Vaca	129±22		-	-	58±?		-	-	
	-Caca	121±?				-		-	-	
AF/Caca	-Caca	242±?				-		65±10	58±?	
	-Lica	129±?				-		-	-	
AF/Lica		278±?				-		-	-	
AF/Cabi		255±				-		-	-	
AF/Acgl		216		61±?					60±?	
AF/Spbe		175		-		-			-	
AF/Vasc		97±22		-	-	50±?		-	45±?	-
AF/Luhi	-Luhi			-		-		-	35±	-
	-Vasc	121				-		-	-	-
AF/Caru		194±119		-		48±12		-	43± 8	-
AF/Cage	-Cage	140±76		55±?		-		-	44±15	-
	-Artr	173		-		-			-	-
AF-WBP		97±140							-	-
LPP/Feid						-				

1/ Confidence limits (95%) for estimating the mean are given for all data where n=5 or more. Question marks are shown where n=3 or 4. Values are computed on a 50-year age base.

Table 3 - Distribution of Boise and Payette Habitat Types by Landtype Association. 1/
(Key to landtype association numbers is on following page.)

Habitat Type	Phase	101	102	103	105	106	107	108	109	110	111	112	113	114	120	121	122	123	130	131	132	133	134	135	136	No Data	Total
PP/Agsp		1	1	-	-	-	-	-	-	-	-	-	-	-	3	-	5	2	-	-	1	1	3	-	-	2	19
PP/Feid		-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	2	6
PP/Putr		-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	1	-	-	-	1	1	-	-	-	3	11
PP/Syal		-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	1	1	-	-	-	-	-	5	10
PP/Prvi		-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	1	-	-	-	-	-	-	-	2	5
DF/Agsp		1	-	-	-	-	-	-	-	-	1	-	-	-	3	-	5	-	-	2	-	-	-	1	-	1	14
DF/Feid		-	1	-	-	-	-	-	-	-		-	-	-		-	-	-	-	-	-	-	-	-	-	2	3
DF/Cage	-Cage	-	-	-	-	-	-	-	2	-	1	-	-	-	7	-	-	1	-	-	-	-	1	-	-	-	12
	Artr	-	-	-	-	-	-	-	3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
DF/Caru		-	-	-	-	-	-	-	2	-	1	-	-	-	7	-	-	-	-	-	1	-	-	-	-	3	14
DF/Spbe	-Spbe	1	-	-	-	-	-	-	-	-	-	-	-	-	2	1	1	1	-	-	1	-	2	-	-	2	11
	-Cage	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	-	-	2	6
	-Caru	-	1	-	-	-	1	-	-	-	-	-	-	-	3	-	-	1	-	1	1	-	-	-	-	2	10
DF/Prvi		1	-	-	-	-	-	-	1	-	-	-	-	-	1	1	4	1	-	-	-	-	-	1	1	1	12
DF/Syal		1	-	-	1	-	-	-	-	-	-	-	-	-	4	-	-	-	-	2	1	-	1	-	-	8	18
DF/Phma		1	-	-	-	-	-	-	1	-	-	-	-	-	11	-	7	-	-	-	1	-	2	2	-	7	32
DF/Acgl		-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	-	-	-	3
GF/Clun		-	-	-	-	2	-	-	1	-	-	-	-	-	2	-	-	-	-	-	1	1	-	-	-	8	15
GF/Vagl		-	-	-	-	-	-	-	-	-	-	-	-	-	11	1	2	-	-	1	-	1	-	-	-	5	21
GF/Spbe		-	-	-	1	1	-	-	-	-	-	-	-	-	8	2	1	-	1	1	3	2	-	-	-	2	22
AF/Clun		1	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	3	6
AF/Mefe		-	-	-	-	-	-	1	1	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	3	7
	-Xete	1	-	-	-	2	-	-	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	11
	-Vagl	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	7
AF/Vagl		-	-	-	-	-	-	1	3	-	-	-	-	-	4	-	-	2	-	-	-	-	-	-	-	7	17
AF/Vaca	-Vaca	1	-	3	-	1	-	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	9
	-Caca	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4
AF/Caca	-Caca	1	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	6	9
	-Lica	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	6
AF/Lica		-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	4
AF/Cabi		-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	4
AF/Acgl		-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	4
AF/Spbe		-	-	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	1	5
AF/Vasc		-	-	1	-	-	-	-	4	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	2	8
AF/Luhi	-Luhi	-	-	-	-	-	-	1	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	6
	-Vasc	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	4
AF/Caru		-	-	-	-	1	-	-	3	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	2	8
AF/Cage	-Cage	-	-	1	-	-	-	-	5	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	4	12
	-Artr	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
AF-WBP		-	-	-	-	-	-	-	5	2	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	1	10
LPP/Feid		-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3

1/ Land Systems Inventory information was supplied by George E. Wendt, Soil Scientist, Boise N.F. and Richard A. Thompson, Soil Scientist, Payette N.F., and John F. Arnold, Batholith Liaison Officer, Boise Zone Office.

Number	Landtype Association
101	Alluvial Land
102	Terrace Land
103	Glacial Outwash Land
105	Alluvial Fan Land
106	Moraine Land, Undifferentiated
107	Toe Slope Land
108	Glacial Plastered Mountain Slope Land
109	Cryoplanated Ridge Land
110	Cirque Basin Land
111	Glacial Trough Land
112	River Spur Land
113	Rocky Ridge Land
114	Subalpine Rim Land
120	Mountain Slope Land
121	Basin Land
122	Oversteepened Canyon Land
123	Faulted Bench Land
130	Plateau Land
131	Dissected Dip Slope Land
132	Dissected Escarpments
133	Scarp Slopes
134	Benchy Plateau Slopes
135	Basalt Mesa Scarp Slopes
136	Basalt Mesa

Letter	Subsection
A	Sturgill Peak
B	Hornet Plateau
C	Fitsum Peak
D	Granite Mountain Uplands
E	Long Valley Foothills
F	Council Mountain
G	Salmon River Canyon
H	Burgdorf Basin
I	Landmark-Bear Valley Basin Uplands
J	Upper South Salmon & Uplands
K	Boise Ridge & Foothills
L	Boise Basin Lands
M	South Fork Payette Canyon & Stream Cut Lands
N	Sawtooth Foothills
O	Trinity - Soldier Mountain Foothills
P	Lowman Uplands
Q	South Fork Boise River Uplands
R	Middle Fork Payette Canyon & Stream Cut Lands
S	Middle Fork Boise Canyon & Stream Cut Lands
T	Smith Prairie Lowlands
U	Montezuma Fault Lands
V	High Valley Uplands
W	Long Valley

Table 6 - Distribution of Boise and Payette Habitat Types by Tentative Subsection. 1/
(Key to subsection letters is on previous page.)

Habitat Type	Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	No Data	Total
PP/Agsp		3	2	-	-	-	-	1	-	-	-	2	-	-	2	-	-	4	1	2	1	-	-	-	1	19
PP/Feid		1	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	2	-	-	1	-	6
PP/Putr		-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	1	3	1	-	1	1	1	11
PP/Syal		-	3	-	-	-	1	1	-	-	-	-	2	-	1	-	-	-	1	-	1	-	-	-	-	10
PP/Prvi		-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	1	-	-	-	2	5
DF/Agsp		3	-	-	-	-	1	-	-	-	-	-	1	-	1	-	-	5	-	-	2	1	-	-	-	14
DF/Feid		-	-	-	1	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	3
DF/Cage	-Cage	1	-	-	-	1	-	1	-	-	-	-	-	1	2	-	2	1	1	2	-	-	-	-	-	12
	-Artr	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	2	-	-	-	-	-	4
DF/Caru		1	1	-	-	1	-	-	2	-	1	-	-	-	-	-	1	-	3	-	-	-	1	-	3	14
DF/Spbe	-Spbe	2	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	1	1	-	2	-	-	-	1	11
	-Cage	-	-	-	1	-	-	-	-	-	-	-	-	1	2	-	-	-	1	-	-	-	-	-	1	6
	-Caru	-	-	-	-	-	2	-	-	-	-	-	2	-	2	-	2	-	-	-	-	-	-	1	1	10
DF/Prvi		-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	2	1	3	2	-	-	-	1	12
DF/Syal		2	2	-	1	-	2	-	-	-	-	-	-	1	-	-	-	-	2	1	-	-	1	-	6	18
DF/Phma		2	1	-	-	-	2	1	1	-	-	5	1	1	3	1	-	1	4	1	3	-	-	-	5	32
DF/Acgl		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	2	-	-	-	-	3
GF/Clun		-	3	-	1	2	4	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	3	15
GF/Vagl		-	-	-	-	1	5	-	-	-	1	1	-	-	-	-	-	-	5	-	-	-	3	-	5	21
GF/Spbe		3	1	-	-	1	10	-	-	-	1	1	-	-	-	-	-	-	3	-	-	-	2	-	-	22
AF/Clun		-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	3	6
AF/Mefe		-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	-	-	1	-	-	-	-	-	3	7
	-Xete	-	-	-	2	1	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	11
	-Vagl	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	7
AF/Vagl		-	-	-	-	-	1	-	-	-	1	-	-	-	1	-	1	-	5	1	-	-	1	-	6	17
AF/Vaca	-Vaca	-	-	-	-	2	-	-	2	2	2	-	-	-	-	-	1	-	-	-	-	-	-	-	-	9
	-Caca	-	-	-	-	1	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
AF/Caca	-Caca	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	6	9
	-Lica	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	6
AF/Lica		-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	4
AF/Cabi		-	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	4
AF/Acgl		-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	1	-	-	-	-	-	4
AF/Spbe		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	1	-	-	-	-	1	5
AF/Vasc		-	-	-	-	1	1	-	-	-	1	-	-	1	-	-	1	-	-	1	-	-	-	-	2	8
AF/Luhi	-Luhi	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	3	6
	-Vasc	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	3	4
AF/Caru		-	-	-	1	-	2	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-	1		1	8
AF/Cage	-Cage	-	-	-	-	-	-	-	-	2	-	-	-	3	-	-	-	-	-	3	-	-	-	-	4	12
	-Artr	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2
AF-WBP		-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	3	-	1	-	-	3	-	1	10
LPP/Feid		-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3

1/ Land Systems Inventory information was supplied by George E. Wendt, Soil Scientist, Boise N.F. and Richard A. Thompson, Soil Scientist, Payette N.F., and John F. Arnold, Batholith Liaison Officer, Boise Zone Office.

Pinus ponderosa/Agropyron spicatum h.t.
(PP/bluebunch wheatgrass)
PP/Agsp

1. HABITAT

PP/Agsp is one of the driest h.t.s in the Pinus ponderosa series. It occurs mostly on dry south facing slopes and ridges. It can be found at lower elevations in most of the major river canyons throughout the area. At the dry extreme, PP/Agsp normally borders a steppe. With cooler temperatures, more moisture, or different soil conditions it may merge with almost any other h.t. in the Pinus ponderosa series and some h.t.s in the Pseudotsuga menziesii series. In areas where the distributions of PP/Agsp and Artemisia tridentata overlap, Artemisia often occurs as a minor component of the PP/Agsp h.t. Otherwise this h.t. corresponds to that described by the Daubenmires (1968).

2. VEGETATION

In good condition, Agropyron spicatum dominates the understory while Poa sandbergii, Balsamorhiza, Lithospermum, and Lupinus occupy the interspaces. On some soils of basaltic origin Lomatium dissectum var. multifidum codominates with Agropyron. On granitic soils in areas near the Sawtooth Mountains, Melica bulbosa increases notably. In poor condition, Agropyron spicatum may be sparse. Then numerous annuals and a few forbs unpalatable to livestock may dominate the understory.

3. MANAGEMENT IMPLICATIONS

This h.t. is marginal for tree growth, but is one of the two best h.t.s for livestock forage production. Big-game forage production is low; however, the big game winter demand on this h.t. may be relatively high. On big-game winter ranges that both livestock and big game use, the forage production may need to be allocated to one or the other depending on objectives. Any tree harvesting should be done selectively and approach a salvage cut. Artificial regeneration would be expensive and survival probabilities would be extremely low. Natural regeneration over a long period of time should be relied upon to maintain forest cover.

Pinus ponderosa/Festuca idahoensis h.t.
(PP/Idaho fescue)
PP/Feid

1. HABITAT

PP/Feid occurs on sites with slightly more moisture than PP/Agsp. It occurs mainly on northerly aspects in areas where PP/Agsp and steppe vegetation occupy the warmer and drier aspects. Typically it borders the PP/Syal h.t. at moist extremes but may also merge with drier h.t.s in the Pseudotsuga menziesii series and PP/Putr on more coarse textured soils. Although PP/Feid can be found in most areas that PP/Agsp occurs, it usually occupies less acreage. Its occurrence on the Boise and Payette N.F. is not extensive.

2. VEGETATION

Bunchgrass and prairie forbs dominate the understory. Normally there are more forbs here than in the PP/Agsp h.t. When PP/Feid lies within the range of big sagebrush, Artemisia tridentata ssp. vaseyana occurs in small amounts on these sites. With disturbance, Artemisia may increase and remain dominant for prolonged periods.

3. MANAGEMENT IMPLICATIONS

Management of PP/Feid is similar to that of PP/Agsp. Forage production may be slightly greater due to a slightly more moist environment.

Pinus ponderosa/Purshia tridentata h.t.
(PP/bitterbrush)
PP/Putr

1. HABITAT

PP/Putr occurs mostly on dry southerly slopes and benches having coarse textured soils. It often borders the pine with grass h.t.s and the more mesic PP/Syal and DF/Spbe h.t.s. PP/Putr can be found at lower elevations in most major river canyons throughout the area. Some of its best development occurs along the Middle Fork of the Boise River. This h.t. is about equal to the Daubenmires' (1968) description.

2. VEGETATION

Purshia tridentata is well represented and dominates an understory of bunch grasses and prairie forbs. The Daubenmires (1968) recognized possible phases of this h.t. according to the climax dominant grasses but did not propose specific names. If needed, two phases may be recognized in our area as follows:

a. *Festuca idahoensis* well represented.
Festuca idahoensis phase (PP/Putr-Feid)

a. *Festuca idahoensis* poorly represented.
Agropyron spicatum phase (PP/Putr-Agsp)

3. MANAGEMENT IMPLICATIONS

Timber productivity of this habitat type is similar to the previous types. Tree harvesting should be done by a selection system with reliance on natural regeneration.

The demand for big game winter forage is often very high in this type because of the aspect, elevation, and the presence of *Purshia tridentata*, one of the more desirable big-game browse plants.

Pinus ponderosa/Symphoricarpos albus h.t.
(PP/snowberry)
PP/Syal

1. HABITAT

PP/Syal is one of the most mesic h.t.s in the Pinus ponderosa series. It normally borders the other h.t.s in this series and more mesic h.t.s in the Pseudotsuga menziesii series. This h.t. occurs most often on southerly aspects from low to mid-elevation. Normally it is found from mid to lower slopes on benches, minor ridges, and some stream terraces.

The distribution of the Symphoricarpos albus union approaches our area from the north and northwest. It shows good development in the Payette, Salmon, and Weiser river drainages. It becomes notably scarce in much of the Boise River drainage and when found there is often restricted to special microsites such as alluvial fans, stream bottoms, and talus strips.

2. VEGETATION

A low cover of Symphoricarpos albus often accompanied by Spiraea betulifolia and Rosa spp. dominates the understory. In our area, Purshia tridentata may sometimes occur as a persistent seral species. Otherwise this h.t. fits the Daubenmires' (1968) description.

3. MANAGEMENT IMPLICATIONS

This type appears to be one of the most productive for timber in the Pinus ponderosa series. Shelterwood or group selection cutting should succeed reasonably well. Reinforcement planting of pine might be done where needed, but usually natural reseeding will regenerate the stand.

Livestock forage production will vary depending on the grass species present and their coverage.

Winter big-game demand and forage supply is usually somewhat less than in PP/Putr.

Pinus ponderosa/Prunus virginiana h.t.
(PP/chokecherry)
PP/Prvi

1. HABITAT

PP/Prvi appears to be slightly drier than PP/Syal h.t. It occurs most often from mid to upper slopes on gentle to moderate terrain with southerly aspects. It normally borders the drier PP/Putr and pine with grass h.t.s and the more mesic DF/Prvi and DF/Spbe h.t.s. Although this h.t. occurs sporadically in the southern half of the Payette River drainage, the bulk of its distribution lies within the Boise drainage.

2. VEGETATION

A light sprawling cover of Prunus virginiana dominates the understory. Normally many forbs are present but not conspicuous. Carex geyeri or Calamagrostis rubescens may dominate the herb layer. Symphoricarpos oreophilus is often present and may be well represented. In seral condition Artemisia and Purshia often compliment the shrub layer.

The Daubenmires (1968) had noted the dominance of Prunus virginiana in certain areas within the steppe, a feature easily seen along the Payette River between Banks and Horseshoe Bend. They had also recognized a dominant layer of Prunus virginiana in certain stands of the PP/Syal h.t. but due to apparent similarities had made no taxonomic separation.

It appears that climatic differences between the Daubenmires' core area and the Boise N.F. have allowed the Prunus community enough amplitude to divorce itself from the Symphoricarpos albus union and occupy its own position in the forest mosaic.

Several community types dominated by Pinus ponderosa and Prunus virginiana are reported from the Black Hills of South Dakota by Thelinius (1972). However, the total understory composition is somewhat different and indicates little relationship to PP/Prvi.

3. MANAGEMENT IMPLICATIONS

PP/Prvi is a new type and management criteria for it are scarce. It appears, however, that timber production is slightly less than in PP/Syal and regeneration slightly more difficult.

Pseudotsuga menziesii/Agropyron spicatum h.t.
(DF/bluebunch wheatgrass)
DF/Agsp

1. HABITAT

The DF/Agsp h.t. represents the warm dry extreme of the Pseudotsuga menziesii series. It occurs mostly on steep mid to upper slopes having southeast to westerly exposures. DF/Agsp usually borders a steppe community at its dry extreme and DF/Spbe or DF/Cage at its cool moist extreme. DF/Agsp is scarce on the Payette N.F. but increases toward the southeast so that the best development in our area is along the South Fork of the Boise River.

2. VEGETATION

Widely spaced trees and a grass dominated understory create a savannah appearance in this h.t. Agropyron spicatum normally dominates associated prairie forbs such as Balsamorhiza sagittata. As in PP/Agsp, Lomatium dissectum var. multifidum codominates with Agropyron spicatum on certain soils of volcanic origin.

When this h.t. occurs within the range of Pinus ponderosa, the sparse canopy of Pseudotsuga seldom excludes the pine completely. Although the pine may be considered seral, it does not respond to disturbance with the vigor typified by seral conifers. Thus a minor climax status for Pinus ponderosa is appropriate in this h.t.

3. MANAGEMENT IMPLICATIONS

This h.t. has little potential for producing timber. Any tree harvesting should be done selectively, relying on natural regeneration to slowly reforest the site. These sites may produce good forage for livestock and wildlife but the steep fragile slopes often associated with this h.t. may preclude any grazing program. In near climax condition, this h.t. has considerable aesthetic appeal.

Pseudotsuga menziesii/*Festuca idahoensis* h.t.
(DF/Idaho fescue)
DF/Feid

1. HABITAT

DF/Feid is a minor type in our area and was found only in the Little Salmon River Canyon and the upper South Fork of the Payette River Canyon. This h.t. appears to represent dry cool site conditions near the lower end of the *Pseudotsuga menziesii* zone.

2. VEGETATION

A grass dominated understory and broken tree canopy create a park like or savannah appearance. *Festuca idahoensis* is usually well represented and often codominated by *Agropyron spicatum*. Numerous forbs are generally present but seldom conspicuous.

3. MANAGEMENT IMPLICATIONS

Until this h.t. becomes better known, management guidelines should follow those of DF/Agsp.

Pseudotsuga menziesii/Carex geyeri h.t.
(DF/elksedge)
DF/Cage

1. HABITAT

This h.t. normally occurs on dry southerly aspects from mid to upper elevations. It will occur on a variety of sites from rolling benchland to steep unstable slopes. In our area DF/Cage is best developed in the Boise River drainage. It also occurs northward into the South Fork of the Payette drainage but is notably scarce in the remainder of our area. Schlatterer (1972) reports a similar h.t. for the Sawtooth Mountains.

2. VEGETATION

Normally a depauperate understory dominated by Carex geyeri provides the main aspect. Trees are usually widely spaced creating a park like to savannah appearance. In openings, a few forbs such as Balsamorhiza, Geranium, and Lupinus may become conspicuous. A few scattered shrubs such as Berberis repens, Ribes cereum, and Symphoricarpos oreophilus are often present, especially in the shade of the trees.

Two phases of this h.t. can be recognized as follows:

1. Artemisia tridentata ssp. vaseyana well represented.
   Artemisia tridentata phase (DF/Cage-Artr)

1. Artemisia poorly represented.
   Carex geyeri phase (DF/Cage-Cage)

DF/Cage-Artr is restricted to the upper elevations of the DF/Cage h.t. where the savannah appearance is most common. Here, Artemisia most often creates a dominant shrub layer as a consequence of overgrazing by sheep. The animals destroy the cover of Carex geyeri with their hooves as they trail one behind the other across the slope. The resulting strips of bare soil provide a seedbed for Artemisia which will dominate until it is replaced by the younger Carex geyeri beneath its canopy. Rodent activity, natural grazing, and the incomplete cover of Carex geyeri most likely maintained Artemisia in pre-Caucasian times. However, coverages of Artemisia in DF/Cage-Artr were no doubt substantially less.

DF/Cage-Cage most often occurs at elevations below DF/Cage-Artr but sometimes it occurs in the same vicinity. Similar grazing disturbance in this phase usually yields forbs or annuals. In DF/Cage-Cage, as in several other h.t.s, patches of Ceanothus velutinus may establish after a fire and persist for many decades.

3. MANAGEMENT IMPLICATIONS

Recovery of vegetation is very slow following disturbance. Timber production is low and timber harvest should generally follow a single-tree or group selection cutting method. Artificial regeneration should generally not be attempted, except at lower elevations where Pinus ponderosa is present as a seral species. Even there, planting pine requires particular attention to site preparation needs, and the level of survival to be expected is lower than on more moist Pseudotsuga h.t.s.

Depending on soil stability and steepness, destruction of the Carex geyeri cover may cause erosion scars that would be difficult to revegetate. Therefore grazing pressure should be closely regulated. In DF/Cage-Artr, burning or spraying of Artemisia to increase Carex geyeri cannot be recommended as the Artemisia provides shade and trampling protection for Carex geyeri seedlings. Burning in DF/Cage-Cage may result in dominance of Ceanothus velutinus germinating from seed stored in the ground.

Pseudotsuga menziesii/Calamagrostis rubescens h.t.
(DF/pinegrass)
DF/Caru

1. HABITAT

The DF/Caru h.t. usually occurs on upper slopes and ridges having gentle to moderate relief. It can be found on various aspects but occupies southeast to southwesterly slopes most often. It will merge with DF/Syal or DF/Spbe on warmer sites and DF/Cage on drier sites. On wetter sites it will border a DF/Phma h.t. and on cooler sites the Abies lasiocarpa series.

DF/Caru occurs throughout much of our area at upper elevations but does not show good development in areas where DF/Cage is well represented. This type is similar to that described by the Daubenmires (1968).

2. VEGETATION

A low sward of Calamagrostis rubescens provides the dominant understory aspect. Trees are normally well spaced and create a park like appearance.

With destruction of the Calamagrostis rubescens sod by grazing, forbs and annuals normally increase. On a few upper ridges west of Cascade however, Artemisia tridentata ssp. vaseyana increases with disturbance in the same manner as in DF/Cage-Artr. In this instance the phase, DF/Caru-Artr, would apply but no such epithet is yet proposed for this small area.

3. MANAGEMENT IMPLICATIONS

Production in this h.t. is moderate for timber and low to moderate for forage, depending on amount of overstory. Calamagrostis rubescens rapidly develops a thick sod when the overstory is reduced and thus requires extra attention in site preparation. When LPP or PP is present, they can be regenerated in openings following adequate site preparation. If DF is the only species adapted to the site, cutting should be restricted to leave enough trees to protect the seedlings from sun and wind.

Pseudotsuga menziesii/Spiraea betulifolia h.t.
(DF/white spiraea)
DF/Spbe

1. HABITAT

Generally DF/Spbe occurs on warm dry southerly exposures at mid to lower elevations. It occupies a variety of sites from steep unstable slopes to gentle rolling terrain. DF/Spbe is relatively scarce in the Payette, Weiser and Salmon drainages but increases toward the southeast. It shows its best development in the Middle Fork and South Fork of the Boise drainage.

2. VEGETATION

A low cover of Spiraea betulifolia normally dominates an assemblage of forbs including Arnica cordifolia, Aster conspicuus, and Balsamorhiza sagittata. Where Calamagrostis rubescens or Carex geyeri are conspicuous, one of the following phases may be appropriate:

1. Calamagrostis rubescens or Carex geyeri well represented.
   2. Calamagrostis rubescens well represented.
      Calamagrostis rubescens phase (DF/Spbe-Caru)
   2. Calamagrostis rubescens poorly represented.
      Carex geyeri phase (DF/Spbe-Cage)

1. Calamagrostis rubescens or Carex geyeri poorly represented.
   Spiraea betulifolia phase (DF/Spbe-Spbe)

The Calamagrostis rubescens phase represents a broad transition to the cool moist DF/Caru h.t. Likewise the Carex geyeri phase is transitional to the cool dry DF/Cage h.t. In these two phases, the graminoids often codominate with Spiraea and are occasionally dominant.

On some sites, the closely related Spiraea pyramidata dominates instead of S. betulifolia. S. pyramidata is considered by Davis (1952) and Peck (1961) but not Hitchcock et al. (1971) to represent a hybrid between the dry site S. betulifolia and the wet site S. douglasii. Our reconnaissance has shown that S. pyramidata occupies an intermediate moisture regime between its two supposed progenitors. However, it appears to coexist more readily with S. betulifolia than with S. douglasii. For this reason S. pyramidata is considered an ecological equivalent of S. betulifolia at the moist end of the Spiraea betulifolia union.

3. MANAGEMENT IMPLICATIONS

Generally vegetation recovers slowly when disturbed and clearcuts would be difficult to regenerate. When Pinus ponderosa is present as a seral species, the pine may be planted with limited success on sites near the moist extreme of this h.t. Reproduction of Pseudotsuga menziesii is favored by silvicultural systems that retain overstory shade.

Of the three phases in this h.t., DF/Spbe-Cage is the least productive and regeneration the most difficult. Management guidelines for this phase should be similar to DF/Cage-Cage.

Likewise in DF/Spbe-Caru, where Calamagrostis rubescens requires special attention during site preparations, management practices should be similar to DF/Caru.

Pseudotsuga menziesii/Prunus virginiana h.t.
(DF/chokecherry)
DF/Prvi

1. HABITAT

The DF/Prvi h.t. normally occurs at mid elevations on easterly aspects but small patches may also occur near steppe communities. Normally it merges with DF/Phma on cooler, wetter sites and DF/Spbe on warmer, drier sites. It may also merge with DF/Caru or DF/Cage on cooler, drier sites. DF/Prvi occurs mainly in the Boise River drainage with isolated locations in the Payette drainage.

2. VEGETATION

A light sprawling cover of Prunus virginiana usually dominates the understory. Numerous forbs occur beneath the Prunus of which Smilacina racemosa is most often the dominant. On some sites Carex geyeri and Calamagrostis rubescens add conspicuous layers to the understory. In some areas, particularly at the higher elevations, Symphoricarpos oreophilus increases and occasionally codominates with Prunus virginiana. Pinus ponderosa is the only seral tree normally found in this h.t.

3. MANAGEMENT IMPLICATIONS

DF/Prvi is a newly recognized h.t. and management guidelines are not yet known. For the present, practices similar to DF/Spbe should be used. It should be noted that Pinus ponderosa is usually the only seral conifer present and that its site index is relatively high.

Pseudotsuga menziesii/Symphoricarpos albus h.t.
(DF/snowberry)
DF/Syal

1. HABITAT

The DF/Syal h.t. occurs at low to moderate elevations on warm, dry sites having east, south, and west exposures. The Symphoricarpos albus union normally borders the Agropyron spicatum or Festuca idahoensis union at its dry extreme and the Calamagrostis rubescens or Physocarpus malvaceus union at its moist end.

On the Boise National Forest, DF/Syal represents the southern-most extension of a habitat type more commonly found to the north and west. It occurs primarily in the Payette River drainage with sporadic locations in the Boise drainage that often coincide with special site conditions.

2. VEGETATION

This h.t. normally supports a rich flora and fairly good stands of Pinus ponderosa during its seral stages. Stands with little disturbance usually have a low dense cover of Symphoricarpos albus often accompanied by Spiraea betulifolia and Rosa spp. On some sites Calamagrostis rubescens forms a thick sod beneath the shrub layer.

The Daubenmires (1968) had included one stand dominated by Spiraea betulifolia that lacked Symphoricarpos albus in their DF/Syal h.t. This stand conforms to our DF/Spbe h.t. Otherwise the DF/Syal h.t. in central Idaho follows their previous description.

3. MANAGEMENT IMPLICATIONS

DF/Syal is one of the more productive h.t.s in the DF series. Usually clearcutting or shelterwood with regeneration to Pinus ponderosa should be successful. Pseudotsuga menziesii can be favored by smaller openings. Sites supporting high coverages of Calamagrostis rubescens may require extra attention during site preparation.

Pseudotsuga menziesii/Physocarpus malvaceus h.t.
(DF/ninebark)
DF/Phma

1. HABITAT

DF/Phma occurs on northerly aspects at moderate elevations throughout our area. It may also extend to low elevations on steep north slopes near lower timberline. Typically it merges with DF/Caru, DF/Acgl, or Abies lasiocarpa series at its cool extreme and DF/Syal or DF/Spbe at the warm dry end.

2. VEGETATION

A tall dense cover of Physocarpus malvaceus normally dominates the understory. A rich assemblage of forbs normally occur in whatever small openings may be present. On other sites Calamagrostis rubescens or Carex geyeri is abundant beneath the shrub layer and in openings.

From north to south, DF/Phma becomes increasingly impoverished in our area. The most productive sites are in the Salmon and Payette drainages and produce vigorous Pinus ponderosa, while along the extreme southern border of the Boise National Forest, some DF/Phma sites support little or no pine. Although the presence of Holodiscus discolor may indicate the very best sites, no valid phases of DF/Phma have been recognized in our area.

3. MANAGEMENT IMPLICATIONS

Where DF/Phma adequately supports Pinus ponderosa, the site is usually one of the most productive in the DF series. Here the pine can usually be managed successfully as a seral species. But where pine establishment is marginal or lacking, Pseudotsuga is favored by silvicultural systems that retain overstory shade.

Pseudotsuga menziesii/Acer glabrum h.t.
(DF/mountain maple)
DF/Acgl

1. HABITAT

This h.t. normally occurs on northerly aspects with seemingly deep fertile soil. It usually borders the Abies lasiocarpa series at its upper extreme and DF/Phma at its lower end. It may also occur on pockets of deep soil near the steppe communities.

In our area, DF/Acgl has only been seen in the Boise River drainage. This h.t. should correspond to the DF/tall shrubs community described by Schlatterer (1972) for the Sawtooth area.

2. VEGETATION

A thick cover of tall shrubs usually dominates the understory. Near climax, Acer glabrum becomes the dominant shrub beneath which a rich assortment of forbs may be found.

With removal of the tree canopy by fire or logging, a dense brushfield usually develops and may persist for many decades.

3. MANAGEMENT IMPLICATIONS

When this h.t. occurs within the distribution of Pinus ponderosa, the pine appears quite thrifty and productive. However, the increased shrub density following disturbance may preclude the success of pine seedlings. Normally, Pinus ponderosa is the only seral conifer in this h.t. From the data available, it appears that DF/Acgl can support relatively high basal areas with mixed stands of Pinus and Pseudotsuga.

Abies grandis/Clintonia uniflora h.t.
(GF/queencup beadlily)
GF/Clun

1. HABITAT

The GF/Clun h.t. represents the warm, moist extreme of the Abies grandis series. On the Boise and Payette forests it occurs at mid-elevations on stream terraces and protected moist slopes. Normally it merges with other h.t.s in the Abies grandis series but may also border the AF/Clun and DF/Phma h.t.s.

GF/Clun becomes more extensive to the north and northwest. In our area it is apparently restricted to the North Fork of the Payette River drainage and the upper reaches of the Salmon and Weiser River drainages.

2. VEGETATION

Clintonia uniflora and Coptis occidentalis provide the key indication of this h.t. Usually they accompany a mixture of moist site herbs which we refer to as the Clintonia union. In some places Vaccinium globulare dominates the understory and throughout the h.t. many taller shrubs will invade if the tree canopy is removed.

This h.t. corresponds to the Abies grandis/Pachistima myrsinites h.t. described by the Daubenmires (1968). Since Pachistima seldom occurs in this h.t. in our area, and its sporadic distribution south of the Salmon River provides little relationship to h.t.s located there, the use of Clintonia uniflora provides a more accurate epithet for our area.

3. MANAGEMENT IMPLICATIONS

Pinus ponderosa and Pseudotsuga menziesii appear very productive in this h.t. Restriction of stand sampling to near climax conditions, however, prevented a substantial expression of sites indices for these species. With disturbance these species seem to establish readily. Larix occidentalis will also grow in this h.t. following disturbance. Except for some portions of the AF/Clun h.t., this is the only h.t. in our area that was observed supporting commercial stands of western larch.

The GF/Clun h.t. offers the forester a greater choice of silvicultural treatments than any other in our area. Where the seral species Pinus ponderosa, Pinus contorta, or Larix occidentalis are chosen for stand regeneration, small clearcuts, shelterwood or large openings of a group selection cut are appropriate. Smaller openings of group or single-tree selection favor Abies grandis, Picea engelmannii, and Pseudotsuga menziesii. Artificial and natural regeneration should both prove successful if procedures are properly executed.

Abies grandis/*Vaccinium globulare* h.t.
(GF/blue huckleberry)
GF/Vagl

1. HABITAT

GF/Vagl most often occurs at mid-elevations on cool northwest to southeast aspects and along stream terraces. It usually borders the SAF/Vagl, DF/Phma, or DF/Caru h.t.s and other h.t.s in the *Abies grandis* series.

This h.t. occurs sporadically throughout most of the *Abies grandis* distribution in our area. It was especially abundant in mountains just west of Cascade to Smith's Ferry, but becomes progressively scarce northward, being replaced by GF/Clun.

2. VEGETATION

A layer of *Vaccinium globulare* normally dominates the understory. *Clintonia uniflora* and *Coptis occidentalis* are absent and other members of the *Clintonia* union are only weakly represented, if present. *Thalictrum occidentale* often becomes the dominant forb in older stands.

In some areas of this h.t. *Linnaea borealis* forms an extensive ground cover but in most places it is sparse or absent. Further study may warrant delineation of these situations but no taxonomic recognition is yet proposed.

3. MANAGEMENT IMPLICATIONS

Pinus contorta and *Pseudotsuga menziesii* appear to be the most productive seral species in this h.t. *Pinus ponderosa* may also grow well here but restriction of stand sampling to old-growth stands did not allow proper expression of its growth potential. *Picea engelmannii* is often found in this h.t. but seldom appears thrifty and the occurrence of *Larix occidentalis* is very sporadic.

Vaccinium globulare has the ability to develop a thick brush layer following overstory removal. Consequently regeneration efforts should promptly follow tree harvest to allow conifer seedlings a competitive advantage over *Vaccinium*.

Abies grandis/Spiraea betulifolia h.t.
(GF/white spiraea)
GF/Spbe

1. HABITAT

This h.t. represents the warm dry extreme of the Abies grandis series. Usually it borders a Pseudotsuga menziesii h.t. at its dry extreme and other Abies grandis h.t.s at the moist end. This h.t. normally occurs from low to mid-elevations on gentle to moderate slopes having a southerly aspect.

GF/Spbe is found most often along the southern limits of the Abies grandis distribution in Idaho. The distribution of this h.t. in our area lies almost entirely within the Payette and Weiser River drainages. It is also reported from the Blue Mountains where it is probably more extensive.

2. VEGETATION

One often finds GF/Spbe in seral condition from repeated burning. Here old growth Pinus ponderosa and Pseudotsuga menziesii form park-like stands with a dense sod of Calamagrostis rubescens beneath. Only the Abies grandis seedlings or saplings indicate the climax potential of these sites.

On sites less frequently burned, the increased shade beneath Abies grandis reduces the density of Calamagrostis rubescens. Then Arnica cordifolia, Chimaphila umbellata, and Spiraea betulifolia normally dominate the understory. In old-growth stands, a light cover of Spiraea usually persists and Thalictrum occidentale often becomes the dominant forb.

3. MANAGEMENT IMPLICATIONS

GF/Spbe appears quite productive for Pinus ponderosa and to a lesser extent for Pseudotsuga menziesii. Regeneration of these two species should prove successful provided proper attention is given to the density of Calamagrostis rubescens and its response to burning. Other seral conifers occur too infrequently in this h.t. for managerial attention.

Even on old mature Abies grandis, conks of the Indian paint fungus, Echinodontium tinctorium, were notably scarce in this h.t. The few conks observed here were usually growing on trees located near ecotones with more mesic Abies grandis h.t.s.

Abies lasiocarpa/Clintonia uniflora h.t.
(AF/queencup beadlily)
AF/Clun

1. HABITAT

AF/Clun is perhaps the mildest h.t. in the Abies lasiocarpa series. It is found on moist protected slopes, benches, and stream terraces at mid to upper elevations and in some low elevation frost pockets.

AF/Clun is easily found on appropriate sites north of McCall but rapidly decreases southward. The southern most station presently known is near Big Creek Summit east of Cascade.

2. VEGETATION

Clintonia uniflora is the most dependable indicator of this h.t. Occasionally Menziesia ferruginea creates a dominant layer, but more often Vaccinium globulare is the prevailing shrub. Many moist site forbs may occur beneath the shrubs and thus obscure the presence of Clintonia. LPP, ES, and WL all occur in this h.t. This is one of the few h.t.s in our area that will adequately support WL.

This h.t. corresponds to the Daubenmires' (1968) Abies lasiocarpa/Pachistima myrsinites h.t. The use of Clintonia instead of Pachistima is for the same reasons outlined under GF/Clun.

3. MANAGEMENT IMPLICATIONS

AF/Clun is perhaps the most productive h.t. in the Abies lasiocarpa series. Silvicultural practices should be similar to those of the GF/Clun h.t. Since it is generally too cool for Pinus ponderosa, clear-cutting will favor Pinus contorta or Larix occidentalis. Shelterwood and group selection cuts will favor Picea engelmannii and Pseudotsuga menziesii. Single-tree selection cuts will favor Abies lasiocarpa.

Natural regeneration on prepared sites should be easily obtainable as well as successful artificial regeneration.

Abies lasiocarpa/Menziesia ferruginea h.t.
(AF/Menziesia)
AF/Mefe

1. HABITAT

AF/Mefe is typically restricted to cool moist northerly aspects that are often quite steep. In our area it most often borders AF/Clun or AF/Xete-Vagl.

The southern range of AF/Mefe is quite similar to that of AF/Clun. However, one isolated stand of AF/Mefe was found in the Middle Fork of the Payette drainage east of Boiling Springs.

2. VEGETATION

A tall thick layer of *Menziesia* dominates the understory beneath which a diverse group of moist site forbs usually grow. Of these forbs, *Viola orbiculata* is most often present. *Vaccinium globulare* is also a common component of the shrub layer.

In our area, AF/Mefe extends south of the range of *Xerophyllum tenax* so this species does not occur throughout the AF/Mefe h.t. Otherwise this h.t. fits the Daubenmires' (1968) description.

3. MANAGEMENT IMPLICATIONS

This h.t. appears fairly productive for *Picea engelmannii* and occasionally, *Pinus contorta*. Overstory removal may allow increased densities of *Menziesia* and *Vaccinium* creating severe competition for tree seedlings. If mineral soil is exposed along with overstory reduction, *Alnus sinuata* often becomes an additional dominant shrub. However, the nitrogen fixing capabilities of *Alnus* may provide some compensation for its presence.

Abies lasiocarpa/Xerophyllum tenax h.t.
(AF/Beargrass)
AF/Xete

1. HABITAT

AF/Xete occupies various aspects of upper elevations. It also occurs occasionally on broad cool terraces at mid elevation. AF/Xete extends into our area from the north where it becomes quite extensive. It shows good development north and east of McCall, but diminishes rapidly to the southeast. The most southern station known to us lies above Sulphur Creek, southeast of Landmark.

2. VEGETATION

Xerophyllum tenax is usually well represented. A few forbs including Hieracium gracile and Pedicularis racemosa are often present. In contrast to western Montana (Pfister et al., 1972), Luzula hitchcockii (L. glabrata) may occur in AF/Xete in our area.

Two phases of this h.t. are distinguished as follows:

1. Vaccinium globulare well represented.
   Vaccinium globulare phase (AF/Xete-Vagl)

1. Vaccinium globulare poorly represented.
   Xerophyllum tenax phase (AF/Xete-Xete)

AF/Xete-Vagl is more typical of cooler aspects, whereas AF/Xete-Xete is more common on warmer aspects with less tree cover. Generally both phases occur in the same areas. However, Picea englemannii is more prevalent in AF/Xete-Vagl and Pinus contorta is the prevailing seral tree in AF/Xete-Xete.

3. MANAGEMENT IMPLICATIONS

Vegetation recovers slowly from disturbance. Pinus contorta is usually the best timber producer. Picea engelmannii may also prove adequate in AF/Xete-Vagl. Production and regeneration should be slightly better in AF/Xete-Vagl than in AF/Xete-Xete.

Abies lasiocarpa/*Vaccinium globulare* h.t.
(AF/blue huckleberry)
AF/Vagl

1. HABITAT

AF/Vagl occurs mostly on north to easterly aspects from mid to upper elevations. It also occurs along certain stream terraces and toe-slopes.

AF/Vagl becomes most abundant south of the distribution of AF/Clun, AF/Mefe, and AF/Xete. It shows good development in the Middle Fork and South Fork of the Payette River drainage and in the Boise River drainage. In our area it extends southward as far as Trinity Mountain.

2. VEGETATION

A layer of *Vaccinium globulare* usually dominates the understory. Moist site forbs such as *Pyrola secunda*, *Chimaphila umbellata*, and *Thalictrum occidentale* commonly grow beneath the *Vaccinium*. Both *Pseudotsuga menziesii* and *Picea engelmannii* are major seral species in this h.t. Occasionally *Pinus ponderosa* is also an important seral tree.

In some areas, *Linnaea borealis* forms an extensive ground cover but usually it is sparse to absent. Further study may warrant recognition of a *Linnaea* phase, but no delineation is yet proposed.

3. MANAGEMENT IMPLICATIONS

Natural regeneration of *Picea engelmannii* and *Pseudotsuga menziesii* should be successful under a shelterwood system. Densities of *Vaccinium* may increase with overstory reduction and the increased competition for tree seedlings may hinder regeneration. At present, little knowledge exists concerning the effects of clearcutting in this h.t.

Abies lasiocarpa/Vaccinium caespitosum h.t.
(AF/dwarf huckleberry)
AF/Vaca

1. HABITAT

AF/Vaca occurs almost exclusively on flat to gentle rolling terrain at mid to upper elevations. It is most often found on or near alluvial deposits that are subject to frost most of the year.

AF/Vaca shows its best development in broad flat valleys such as Long Valley, Landmark Valley, and near Warm Lake. It occurs extensively from Burgdorf to Bear Valley with sporadic localized stations southward to Rocky Bar. It was not seen in the Weiser River drainage.

2. VEGETATION

Stable communities of LPP usually dominate these sites. Scattered and often stunted ES and AF usually occur beneath the pine. Seedlings of LPP are usually numerous. AF reproduction is mostly vegetative which creates dense shrublike patches that prevent LPP establishment. However, LPP always dominates the openings. As this h.t. approaches more moderate conditions or sites with greater relief, AF attains a more tree-like stature and Vaccinium scoparium becomes more abundant. Forbs occurring repeatedly throughout this h.t. include Fragaria virginiana, Viola adunca, and Epilobium angustifolium. Two phases of AF/Vaca can be recognized as follows:

1. Sites moist or poorly drained. Calamagrostis canadensis usually present, occasionally dominant. Ligusticum tenuifolium and Lonicera caerulea usually present.
   Calamagrostis canadensis phase (AF/Vaca-Caca)

1. Sites dry or well drained. Above combination of species usually absent; if present in part then subordinant to Calamagrostis rubescens or Carex geyeri which are often well represented.
   Vaccinium caespitosum phase (AF/Vaca-Vaca)

3. MANAGEMENT IMPLICATIONS

Pinus contorta appears to be the best suited timber species for this h.t. Natural seedling establishment does not appear difficult, but adequate data on tree growth is not yet available for this h.t. Very few Pinus contorta have serotinous cones in this h.t. so natural regeneration would require small openings and artificial regeneration would be required for large openings.

Forage production in AF/Vaca-Vaca depends largely on the amount of Calamagrostis rubescens present and is often fairly low. In AF/Vaca-Caca numerous forbs and grasses often yield abundant forage. But if livestock is allowed on these wet sites too early, trampling could destroy much of the potential forage.

Abies lasiocarpa/Calamagrostis canadensis h.t.
(AF/bluejoint)
AF/Caca

1. HABITAT

AF/Caca occurs primarily at mid to upper elevations on the toeslopes, stream terraces, and wet bottom lands. It may also occur on wet benches on mid to upper slopes, especially in the area north of McCall.

In our area AF/Caca is known from the Hazard Lakes southward to the Middle Fork of the Boise River. It is also reported from the Sawtooth Mountains (Schlatterer, 1972).

2. VEGETATION

Calamagrostis canadensis is usually well represented and often dominates the understory. A rich assortment of wet site forbs such as Aconitum columbianum, Dodecatheon jeffreyi, and Senecio triangularis is sometimes present. Occasional shrubs more typical of drier sites may occur on hummocks or at the base of trees. Both Picea engelmannii and Pinus contorta act as seral species in this h.t. but Picea creates a more persistent stand that is secondary to Pinus.

AF/Caca consists of two phases that can be recognized as follows:

1. Ligusticum canbyi well represented. Forb component well developed.
   Ligusticum canbyi phase (AF/Caca-Lica)

1. Ligusticum canbyi poorly represented, usually absent. Forb component not well developed.
   Calamagrostis canadensis phase (AF/Caca-Caca)

3. MANAGEMENT IMPLICATIONS

AF/Caca produces some of our best stands of ES sawtimber. Maintenance of timber production will require clearcutting and intensive site preparation. Upon overstory removal, Calamagrostis canadensis and several Carex species increase rapidly in response to sunlight and elevated water tables, creating severe competition for tree seedlings. Site preparation must be accomplished in late summer after the area has dried sufficiently to support heavy equipment. Planting ES in contour trenches has been very successful in areas where grazing has been restricted. Natural regeneration of ES may also be feasible with maximum site preparation. However, protection from grazing would be needed

for several years more than for a plantation. Partial cutting is not recommended because severe windthrow will result when soils are saturated.

Water tables in this h.t. are usually near the surface and rise after cutting. Heavy equipment use should be restricted to late summer and early fall when water tables are lowest. Likewise, cattle may churn the soil by trampling and destroy considerable plant cover as well as conifer seedlings.

Abies lasiocarpa/Ligusticum canbyi h.t.
(AF/canby's ligusticum)
AF/Lica

1. HABITAT

This minor h.t. is usually restricted to mid and upper slopes and benches that are quite wet most of the year. These sites often represent mountain seeps that have accumulated a soil and duff layer. This h.t. usually occurs on steeper slopes than AF/Caca. It was observed only in the Hazard Lakes - Payette Lakes area.

2. VEGETATION

A rich assortment of forbs dominates the understory. Of these, Senecio triangularis, Thalictum occidentale, Pedicularis racemosa and Viola orbiculata occur here consistently. Luzula hitchcockii occurs regularly on raised microsites and Veratrum viride commonly invades disturbed areas. Pinus contorta shows only minor tendencies to invade openings and Picea engelmannii forms persistent stands that show little evidence of being completely replaced by Abies lasiocarpa.

3. MANAGEMENT

The rich forb layer can produce forage for sheep. Increasing amounts of Veratrum viride may reflect increasing grazing disturbance. Picea engelmannii usually produces the most timber in this h.t. However, a windthrow hazard may exist. Harvest cuttings and regeneration methods should be similar to AF/Caca although openings should probably be kept very small to aid establishment of Picea seedlings.

Abies lasiocarpa/Caltha biflora h.t.
(AF/marshmarigold)
AF/Cabi

1. HABITAT

AF/Cabi occurs mostly on flat lowlands near bogs and other wet areas at upper elevations. These sites normally represent previous ponds and stream beds that have accumulated enough sediment and debris to support trees. AF/Cabi identifies the wettest sites in the AF series.

This h.t. was found primarily in the southern half of our area from Trinity Mountain to Bear Valley. North of McCall, Caltha leptosepala replaces C. biflora on similar sites but it remains to be seen if C. leptosepala indicates a similar h.t.

2. VEGETATION

In openings, numerous wet site forbs usually prevail obscuring the presence of Caltha. With increasing shade, the forbs decrease and Caltha becomes more evident. Shrubs typical of drier sites such as Vaccinium scoparium often occur on scattered hummocks or at the base of large trees. Lonicera involucrata and Dodecatheon jeffreyi also occur here regularly.

3. MANAGEMENT IMPLICATIONS

Most forms of disturbance in this h.t. may degrade the site to a bog situation. Tree regeneration depends on the raised microsites of hummocks and fallen logs. Use by livestock may easily churn the wet soil and destroy the understory as will most machinery. Acreages of AF/Cabi are usually small in any one area, but should be recognized when considering access and uses of adjacent h.t.s. Intensive management for timber production is not recommended because of the hazards to water and soil resources.

Abies lasiocarpa/Acer glabrum h.t.
(AF/mountain maple)
AF/Acgl

1. HABITAT

AF/Acgl usually occurs on cool moist northwest to easterly aspects at medium elevations. It most often borders the DF series at its warm extreme and the AF/Vagl h.t. on cooler sites. It appears to be associated with deep fertile soils.

This h.t. is best represented in the Boise River drainage with sporadic locations northward to the Middle Fork of the Payette. It is not reported from adjacent areas.

2. VEGETATION

A thick cover of tall shrubs normally dominates the understory with Acer glabrum becoming the prevailing shrub near climax. Beneath and between the shrubs are many small openings dominated by moist site forbs. Thalictrum occidentale is usually the dominant forb. Clematis columbiana and Penstemon wilcoxii occur regularly in this h.t. but seldom appear elsewhere in the AF series for our area. Normally, Pseudotsuga menziesii is the only seral tree in this h.t. and Picea engelmannii is consistently absent.

3. MANAGEMENT IMPLICATIONS

Complete overstory removal normally allows development of dense persistent brushfields. The brush provides browse for deer and elk but competes severely with coniferous seedlings. The numerous forbs provide adequate forage for sheep which can also defoliate the lower branches on shrubs. In some situations, this defoliation may provide enough sunlight for establishment of tree seedlings after the sheep are removed.

Both DF and AF appear productive in this h.t. In old growth stands where shrub density has diminished, group selection and single-tree selection should allow successful regeneration.

Abies lasiocarpa/Spiraea betulifolia h.t.
(AF/white spiraea)
AF/Spbe

1. HABITAT

This h.t. constitutes the warm dry extreme of the Abies lasiocarpa series in our area. It typically occurs on northeast to northwesterly aspects at elevations where Pseudotsuga occupies the warmer slopes and ridges. Normally it borders DF/Spbe or DF/Cage at its warm extreme and AF/Vagl at its cool moist extreme. It may also merge with AF/Cage or AF/Caru on cooler dry sites.

AF/Spbe is a relatively minor h.t. and is fairly restricted. It has been observed mainly in the Boise River drainage and is reported from the upper South Fork of the Payette drainage and the Sawtooth Mountains.

2. VEGETATION

A low cover of Spiraea betulifolia dominates the understory. A few forbs are normally present among which Osmorhiza chilensis and Thalictrum occidentale are perhaps the most common. Occasionally Carex geyeri or Calamagrostis rubescens forms a dominant layer beneath the Spiraea.

Pseudotsuga and sometimes Pinus contorta act as seral trees in this h.t., but Picea engelmannii rarely grows here.

3. MANAGEMENT IMPLICATIONS

If Pinus contorta is present on the site, small clearings should produce LPP either naturally or by planting. Group selection or single-tree selection can be used to naturally regenerate Pseudotsuga and Abies lasiocarpa. Large clearcuts may be difficult to regenerate because of the droughty conditions in this h.t.

Abies lasiocarpa/Vaccinium scoparium h.t.
(AF/grouse whortleberry)
AF/Vasc

1. HABITAT

AF/Vasc occurs extensively from mid to upper elevations in our area. It occupies a variety of aspects and borders many other h.t.s in the AF series. In our area it is recorded from the Hazard Lakes southward to Trinity Mountain. It was notably scarce, however, in the mountains west of Cascade.

2. VEGETATION

A low cover of *Vaccinium scoparium* dominates the understory. Other shrubs, if present, are usually sparse and well scattered. In some areas *Calamagrostis rubescens* or *Carex geyeri* codominate with *Vaccinium*. A few forbs are usually present of which *Pedicularis racemosa* and *Valeriana sitchensis* are perhaps the most common.

3. MANAGEMENT IMPLICATIONS

Vegetation in AF/Vasc recovers slowly from major disturbance. Normally *Pinus contorta* appears to be the most suitable for timber management. Small patch cutting or strip cutting may be used judiciously where pine regeneration is desired. Areas with dense *Calamagrostis rubescens* may require special site preparation.

Abies lasiocarpa/Luzula hitchcockii h.t.
(AF/smooth woodrush)
AF/Luhi

1. HABITAT

In our area, AF/Luhi occurs mostly on northerly aspects where the snow disappears late in the growing season. It is often found near cirque headlands wherever the soil escaped complete glacial scouring. Acreages of AF/Luhi in any one area are small but the h.t. is well distributed. It is known from the Hazard Lakes area south to the North Fork of the Boise River and from western Montana (Pfister et al. 1972).

2. VEGETATION

Luzula hitchcockii is usually well represented. Only a few forbs such as Arnica latifolia, Chionophila tweedyi, and Pedicularis contorta are found here.

Two phases exist in this h.t.:

1. Vaccinium scoparium well represented.
   Vaccinium scoparium phase (AF/Luhi-Vasc).

1. Vaccinium poorly represented.
   Luzula hitchcockii phase (AF/Luhi-Luhi).

AF/Luhi-Vasc is the more common of the two phases and represents a broad transition to the AF/Vasc h.t.

AF/Luhi-Luhi is more restricted to the uppermost elevations where Luzula forms a thick sod. Where the Luzula cover is destroyed, Veratrum viride and Polygonum phytolaccaefolium often invade the bared soil. The lack of much terrain above 8,000 feet probably accounts for scarcity of this phase in our area. AF/Luhi-Luhi usually borders AF-WBP near the ridges.

3. MANAGEMENT IMPLICATIONS

Trees grow very slowly in this h.t. and their timber quality is often marginal. Heavy snowpacks often deform the smaller trees and regeneration of AF may be vegetative. The depth and persistence of snow in this h.t. indicates water is a key value in management consideration.

Abies lasiocarpa/Calamagrostis rubescens h.t.
(AF/pinegrass)
AF/Caru

1. HABITAT

AF/Caru normally occurs on gentle upper slopes and ridges with various aspects. It may also occur under special site conditions on stream terraces and valley floors. It borders a number of other h.t.s in this series as well as DF/Caru. AF/Caru occurs sporadically throughout our area but was notably scarce north of McCall. It is also seldom found in areas where AF/Cage is abundant.

2. VEGETATION

A low cover of Calamagrostis rubescens usually accompanied by Carex geyeri provides the dominant understory aspect. Symphoricarpos oreophilus is usually present but very scattered. Normally only a few forbs are present. Of these, Achillea millefolium, Penstemon attenuatus, and either Hieracium cynoglossoides or H. albertinum appear most frequently. Pinus contorta is the common seral tree.

In the mountains west of Cascade, a few sites of AF/Caru have a dominant layer of Artemisia tridentata ssp. vaseyana. In these situations, AF/Caru-Artr would apply as a phase designation but the phase is not yet proposed for this small area. In appearance these sites closely resemble AF/Cage-Artr.

3. MANAGEMENT IMPLICATIONS

Vegetation recovery is slow in this h.t. and disturbances should be carefully controlled. Pinus contorta should regenerate in small openings. Group selection and single-tree selection should be used to reproduce Pseudotsuga and Abies lasiocarpa. Plantings of Pinus contorta may succeed but natural regeneration should be relied on for other species. Development of Calamagrostis rubescens following overstory removal and/or burning require site preparation for conifer reestablishment.

Abies lasiocarpa/Carex geyeri h.t.
(AF/elksedge)
AF/Cage

1. HABITAT

AF/Cage occupies various aspects on upper slopes and ridges. It may also occur on dry stream terraces and valley floors. It usually borders the AF-WBP zone at its upper limits but merges with DF/Cage and numerous h.t.s in the Abies lasiocarpa series at lower elevations.

AF/Cage is known from House Mountain and Trinity Mountain northward to Warren. It is not recorded west of the North Fork of the Payette River. Schlatterer (1972) also reports AF/Cage from the Sawtooth area.

2. VEGETATION

A low mat of Carex geyeri dominates the herb layer. Achillea millefolium and Epilobium angustifolium appear most consistently in the scant forb component. Symphoricarpos oreophilus is often present but well scattered. In some areas, Polygonum phytolaccaefolium increases drastically after disturbance.

Two phases exist as follows:

1. Artemisia tridentata ssp. vaseyana well represented.
   Artemisia tridentata phase (AF/Cage-Artr)

1. Artemisia poorly represented
   Carex geyeri phase (AF/Cage-Cage)

AF/Cage-Artr appears mostly on the upper slopes and ridges where the savannah condition prevails. Densities of Artemisia appear related to grazing history as outlined under DF/Cage-Artr.

AF/Cage-Cage normally occurs at slightly lower elevations where the tree density is usually greater. Pinus contorta reproduces more successfully here and Ceanothus velutinus may appear following fire.

3. MANAGEMENT IMPLICATIONS

Vegetation in this h.t. recovers very slowly from disturbance and timber production is quite low. In AF/Cage-Cage, Pinus contorta is the prevalent seral tree but regeneration may be difficult to obtain. In AF/Cage-Artr, Pinus albicaulis is more often present than Pinus contorta and its reproduction appears marginal. Picea engelmannii seldom occurs in this h.t. except in AF/Cage-Cage where it may occur on stream terraces.

Destruction of the Carex geyeri cover by grazing may expose fragile soils that will be difficult to revegetate. Production of natural forbs and grasses by reducing the Carex geyeri is not reliable.

Abies lasiocarpa-Pinus albicaulis h.t. (AF-WBP)

1. HABITAT

AF-WBP occurs on the uppermost slopes and ridges of our area. Soils vary from fine sandy conditions to coarse rubble. Trees are often deformed by severe wind or heavy snowpack. The growing season is often short and frost is not uncommon throughout the summer. These sites represent the upper timberline typical of our area.

2. VEGETATION

Clusters of Abies lasiocarpa and Pinus albicaulis scattered over open ridges create the dominant aspect. Frequently the Abies reproduces vegetatively as snow presses the lower branches to the ground. The eventual result is a doughnut-shaped clone expanding outwards. Severe wind and ice storms frequently destroy branches on the windward side so that the Abies 'doughnuts' usually expand fastest to the leeward.

Vegetation between the trees varies considerably between sites and presents a mosaic of plant communities. In our area two of these communities are quite evident. One occupies the broad gentle southerly and westerly aspects and has a very dry windswept appearance. Stipa occidentalis shows evidence of being the climax dominant although Lupinus species often prevail as a probable result of grazing. The second community occupies easterly and northerly aspects and appears slightly mesic. Here Juncus parryi is the climax dominant accompanied frequently by Chionophila tweedyi. Other communities also exist in AF-WBP but their small areas and devastation by sheep preclude easy recognition.

3. MANAGEMENT IMPLICATIONS

AF-WBP has little potential for timber production. Forage production may have been adequate in the past, but heavy grazing has decimated much of the vegetation. Recovery of this vegetation is very slow and in some areas soil loss may never allow complete restoration.

AF-WBP is eagerly sought by recreationists for hiking and camping. The open slopes with little undergrowth afford easy travel and the surrounding scenery has considerable aesthetic appeal.

Pinus contorta/*Festuca idahoensis* h.t.
(LPP/Idaho fescue)
LPP/Feid

1. HABITAT

LPP/Feid was found only on glacial outwash on some of our broad valley floors. It most often borders AF/Cage or AF/Vaca on flats and AF/Vasc on adjacent slopes. LPP/Feid was seen near Warm Lake, south of Landmark, and in Bear Valley. It is also reported for the Sawtooth area (Schlatterer, 1972).

2. VEGETATION

Pinus contorta is the only tree present and reproduces beneath its own canopy. Understories are very depauperate. Only *Festuca idahoensis* is consistently well represented. On some sites *Calamagrostis rubescens* is present and occasionally codominates with *Festuca*. On one site the orchid, *Spiranthes romanzoffiana*, had rooted repeatedly in the clumps of *Festuca*.

3. MANAGEMENT IMPLICATIONS

Pinus contorta is the only tree found on these sites. The trees grow quite slowly and seldom exceed pole size. Reproduction is adequate to replace natural mortality. Forage production is low and recovery from disturbance takes a long time. Most of these stands appear stagnated but their response to thinning remains questionable.

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